DEPARTMENT OF THE ARMY

THE OFFICIAL U.S. ARMY

COMBAT

SKILLS HANDBOOK

REVISED AND UPDATED BY
SERGEANT FIRST CLASS MATT LARSEN

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Duty, honor, country: Those three hallowed words reverently dictate what you ought to be, what you can be, and what you will be. They are your rallying point to build courage when courage seems to fail, to regain faith when there seems to be little cause for faith, to create hope when hope becomes forlorn.

—General Douglas MacArthur, on receiving the Sylvanus Thayer Medal at the U.S. Military Academy, 12 May, 1962

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PREFACE

Modern combat is chaotic, intense, and shockingly destructive. In your first battle, you will experience the confusing and often terrifying sights, sounds, smells, and dangers of the battlefield—but you must learn to survive and win despite them.

1. You could face a fierce and relentless enemy.
2. You could be surrounded by destruction and death.
3. Your leaders and fellow soldiers may shout urgent commands and warnings.
4. Rounds might impact near you.
5. The air could be filled with the smell of explosives and propellant.
6. You might hear the screams of a wounded comrade.

However, even in all this confusion and fear, remember that you are not alone. You are part of a well-trained team, backed by the most powerful combined-arms force, and the most modern technology in the world. You must keep faith with your fellow soldiers, remember your training, and do your duty to the best of your ability. If you do, and you uphold your Warrior Ethos, you can win and return home with honor.

This is the soldier's Training Circular (TC). It tells the soldier how to perform the combat skills needed to survive on the battlefield. All soldiers, across all branches and components, must learn these basic skills. Noncommissioned officers (NCOs) must ensure that their soldiers receive training on—and know—these vital combat skills.

PART ONE
WARRIOR ETHOS

What is Warrior Ethos? At first glance, it is just four simple lines embedded in the Soldier's Creed. Yet, it is the spirit represented by these four lines that—

- Compels soldiers to fight through all adversity, under any circumstances, in order to achieve victory.
- Represents the U.S. soldier's loyal, tireless, and selfless commitment to his nation, his mission, his unit, and his fellow soldiers.
- Captures the essence of combat, army values, and warrior culture.

Sustained and developed through discipline, commitment, and pride, these four lines motivate every soldier to persevere and, ultimately, to refuse defeat. These lines go beyond mere survival. They speak to forging victory from chaos; to overcoming fear, hunger, deprivation, and fatigue; and to accomplishing the mission:

THE SOLDIER'S CREED
I am an American soldier.
I am a Warrior and a member of a team.
I serve the people of the United States and live the Army Values.
I am disciplined, physically and mentally tough, trained and proficient in my Warrior tasks and drills.
I always maintain my arms, my equipment, and myself.
I am an expert and I am a professional.
I stand ready to deploy, engage, and destroy the enemies of the United States of America in close combat.
I am a guardian of freedom and the American way of life.
I am an American soldier.

CHAPTER 1
INTRODUCTION

Military service is more than a "job." It is a profession with the enduring purpose to win wars and destroy our nation's enemies. The Warrior Ethos demands a dedication to duty that may involve putting your life on the line, even when survival is in question, for a cause greater than yourself. As a soldier, you must motivate yourself to rise above the worst battle conditions—no matter what it takes, or how long it takes. That is the heart of the Warrior Ethos, which is the foundation for your commitment to victory in times of peace and war. While always exemplifying the four parts of Warrior Ethos, you must have absolute faith in yourself and your team, as they are trained and equipped to destroy the enemy in close combat. Warrior drills are a set of nine battle drills, consisting of individual tasks that develop and manifest the Warrior Ethos in soldiers.

OPERATIONAL ENVIRONMENT

This complex operational environment offers no relief or rest from contact with the enemy across the spectrum of conflict. No matter what combat conditions you find yourself in, you must turn your personal Warrior Ethos into your commitment to win. In the combat environment of today, unlike conflicts of the past, there is little distinction between the forward and rear areas. Battlefields of the Global War on Terrorism, and battles to be fought in the U.S. Army's future, are and will be asymmetrical, violent, unpredictable, and multidimensional. Today's conflicts are fought throughout the whole spectrum of the battlespace by all soldiers, regardless of military occupational specialty (MOS). Every soldier must think as a warrior first; a professional soldier, trained, ready, and able to enter combat; ready to fight—and win—against *any* enemy, *any* time, *any* place.

ARMY VALUES

U.S. Army values reminds us and displays to the rest of the world—the civilian governments we serve, the nation we protect, other nations, and even our enemies—who we are and what we stand for (Figure 1-1). The trust you have for your fellow soldiers, and the trust the American people have in you, depends on how well you live up to the army values. After all, these values are the fundamental building blocks that enable you to understand right from wrong in any situation. Army values are consistent and support one another; you cannot follow one value and ignore the others. Figure 1-1 shows the army values, which form the acrostic LDRSHIP.

Loyalty	Bear true faith and allegiance to the Constitution, the Army, your unit, and other Soldiers.
Duty	Fulfill your obligations.
Respect	Treat people with dignity as they should be treated.
Selfless Service	Put the welfare of the nation, the Army, and your subordinates before your own.
Honor	Live up to all the Army Values.
Integrity	Do what's right, legally and morally.
Personal Courage (Physical or Moral)	Face fear, danger, or adversity.

Figure 1-1. Army values.

Performance in combat, the greatest challenge, requires a basis, such as army values, for motivation and will. In these values are rooted the basis for the character and self-discipline that generates the will to succeed and the motivation to persevere. From this motivation derived through tough realistic training and the skills acquired, which will make you successful, a soldier who "walks the walk."

Army values, including policies and procedures, form the foundation on which the army's institutional culture stands. However, written values are useless unless practiced. You must act correctly with character, complete understanding, and sound motivation. Your trusted leaders will aid you in adopting such values by making sure their core experiences validate them. By this method, strategic leadership embues army values into all soldiers.

LAW OF LAND WARFARE

The conduct of armed hostilities on land is regulated by FM 27-10 *(The Law of Land Warfare*) and the law of land warfare. Their purpose is to diminish the evils of war by protecting combatants *and* noncombatants from unnecessary suffering, and by safeguarding certain fundamental human rights of those who fall into the hands of the enemy, particularly enemy prisoners of war (EPWs), detainees, wounded and sick, and civilians. Every soldier adheres to these laws, and ensures that his subordinates adhere to them as well, during the conduct of their duties. Soldiers must also seek clarification from their superiors of any unclear or

apparently illegal order. Soldiers need to understand that the law of land warfare not only applies to states, but also to individuals, particularly all members of the armed forces.

WARRIOR CULTURE

The warrior culture, a shared set of important beliefs, values, and assumptions, is crucial and perishable. Therefore, the army must continually affirm, develop, and sustain it, as it maintains the nation's existence. Its martial ethic connects American warriors of today with those whose previous sacrifices allowed our nation to persevere. You, the individual soldier, are the foundation for the warrior culture. As in larger institutions, the armed forces use culture, in this case warrior culture, to let people know they are part of something bigger than just themselves; they have responsibilities not only to the people around them, but also to those who have gone before and to those who will come after them. The warrior culture is a part of who you are, and a custom you can take pride in. Personal courage, loyalty to comrades, and dedication to duty are attributes integral to putting your life on the line.

BATTLE DRILL

A battle drill is a collective action, executed by a platoon or smaller element, without the application of a deliberate decision-making process. The action is vital to success in combat or critical to preserve life. The drill is initiated on a cue, such as an enemy action or your leader's order, and is a trained response to that stimulus. It requires minimum leader orders to accomplish, and is standard throughout the army. A drill has the following advantages:

- It is based on unit missions and the specific tasks, standards, and performance measures required to support mission proficiency.
- It builds from simple to complex, but focuses on the basics.
- It links how to train and how to fight at small-unit level.
- It provides an agenda for continuous coaching and analyzing.
- It develops leaders and builds teamwork and cohesion under stress.
- It enhances the chance for individual and unit survival on the battlefield.

WARRIOR DRILLS

The warrior drills—

- Are a set of core battle drills for small units from active and reserve component organizations across the army, regardless of branch.
- Describe a training method for small units. This method requires training individual, leader, and collective tasks before the conduct of critical wartime missions.
- Provide a foundation for the development of specific objectives for combat. The expanded list of warrior drills helps place the individual soldier's tasks (as well as the team) in sufficient context to identify meaningful consequences of individual behavior.
- Have individual tasks that develop and manifest the Warrior Ethos. A *barrier*, for example, is an element that impedes a response or behavior. *Barrier control* can focus on points that are most sensitive to the behavior of individuals, such as choices,

actions, and interactions; and on those with the most serious consequences, such as effects on other individuals and success of the mission.

- Create opportunities to develop the Warrior Ethos. The nine drills follow:
    1. React to Contact (visual, improvised explosive device [IED], direct fire).
    2. React to Ambush (Near).
    3. React to Ambush (Far).
    4. React to Indirect Fire.
    5. React to a Chemical Attack.
    6. Break Contact.
    7. Dismount a Vehicle.
    8. Evacuate Wounded Personnel from Vehicle.
    9. Establish Security at the Halt.

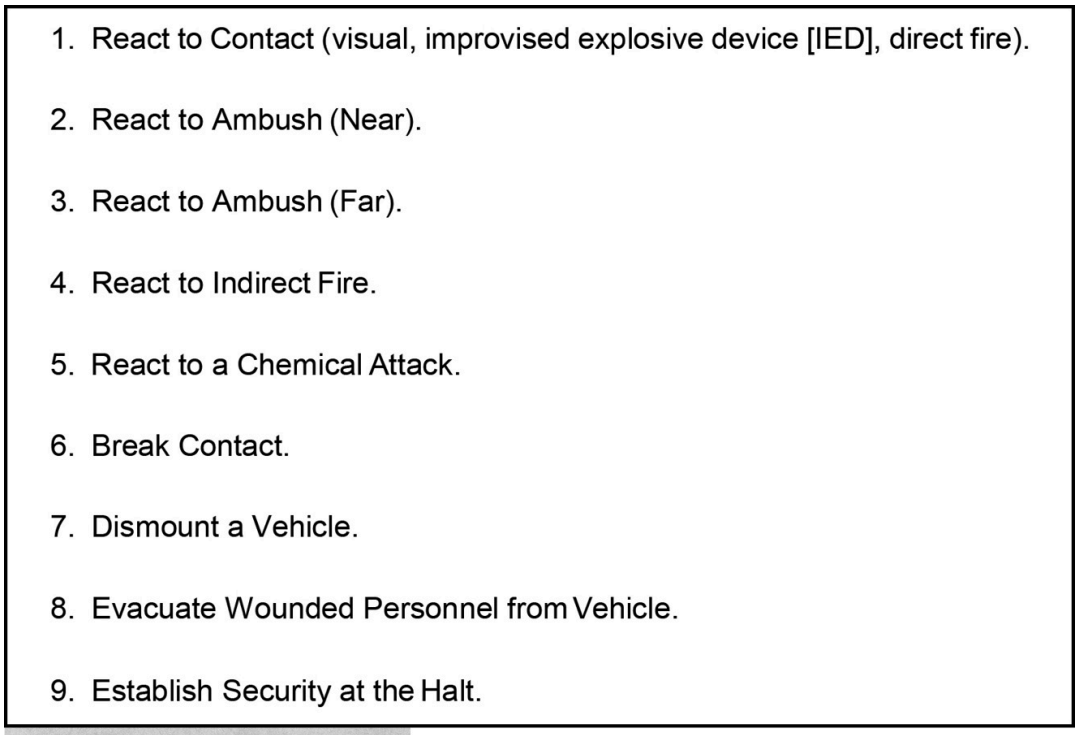


Figure 1-2. Warrior drills.

CHAPTER 2
INDIVIDUAL READINESS

The U.S. Army is based on our nation's greatest resource—you, the individual fighting soldier. Success in the defense of our nation depends on your individual readiness, initiative, and capabilities. You are cohesive, integral parts of the whole. Your mission is to deter aggression through combat readiness and, when deterrence fails, to win the nation's wars. This mission must not be compromised. You must be ready.

Deployment is challenging and stressful—both on you and on your family. You will be away from the comforts of home. This is not easy. Preparedness can reduce the stress and increase your focus and confidence once you are deployed.

PREDEPLOYMENT

What could or would happen if you were a long way from your family for an indefinite period of time and unable to communicate with them? The organization losing you will complete a DA Form 7425, *Readiness and Deployment Checklist*, on you, but it is not designed for your use. Figure 2-1 shows an example checklist that you might create for your own use.

Defense Enrollment Eligibilty Reporting System (DEERS)	Verify your DEERS information and ensure your family members can get needed medical care in your absence.
Dental Records	Update if needed.
Documents, Locations of	Ensure that your spouse or other family member(s) know where to find all of the above documents.
DD Form 93 Emergency Data Record	Check to ensure this is current and correct.
Eyeglasses and Protective Mask Inserts	Ensure you have two pairs of eyeglasses and protective mask inserts, all with your current prescription, if required.
Family Assistance	
Army Community Service (ACS)	Tell your family where to get various kinds of support and help while you are gone.
Legal Aid, Military	Tell your spouse where to get military legal aid in your absence.
Readiness Group (FRG)	Tell your family where to get various kinds of support and help while you are gone.
Finances	Ensure your spouse has access to all of your records and accounts and update them as needed.
Identification	Ensure you have two sets of these, if required.
Legal	See Family Assistance.
Life Insurance	Designate your beneficiary on SGLV Forms 8286 and 8286A, Soldier's Group Life Insurance (SGLI) Election and Certificate.
Directive, Advance	Specify any decisions you wish others to make on your behalf should you be unable to do so for yourself.
Medical (see also Power of Attorney)	
DD Form 2766 (Shot Record)	Keep your vaccinations and immunizations current.
Directive, Advance	Prepare if you want to specify how decisions are made on your behalf should you be unable to do so for yourself.
Living Will	Prepare if desired.
Records	Update if needed.
Warnings Tags	Ensure you have two sets of these, if required.
Power of Attorney	
General	Prepare to allow someone to perform all duties for you in your absence.
Medical, Durable	Prepare one of these to designate who makes decisions for you or your dependents, including your minor children, should a medical emergency occur while you are deployed or otherwise unable to make the decision yourself.
Special	Prepare to allow someone to perform a particular kind of duty for you in your absence.
Property	Prepare or update accounts, documents, and records as needed.
Service Record	Check to ensure this is current and correct.
Training	Update your weapon qualification(s), if needed.
Will(s)	Prepare new or update existing, for you and your spouse, if needed.

EXAMPLE

Figure 2-1. Example personal predeployment checklist.

Your installation legal assistance center can provide a great number of services. Army legal assistance centers provide answers and advice to even the most complex problems. Such legal assistance usually does not include in-court representation. Some of the issues that your installation's legal assistance center may be able to help with follow:

- Marriage and divorce issues.
- Child custody and visitation issues.
- Adoptions or other family matters (as expertise is available).
- Wills.
- Powers of attorney.
- Advice for designating Soldier's Group Life Insurance (SGLI) beneficiaries.
- Landlord-tenant issues.
- Consumer affairs such as mortgages, warranties.
- Bankruptcies.
- Garnishments and indebtedness.
- Notarizations.
- Name changes, as expertise is available.
- Bars to reenlistment (as available).
- Hardship discharges.
- Taxes.

PERSONAL WEAPON

Your personal weapon is vital to you in combat. Take care of it, and it will do the same for you. Seems obvious, right? Apparently not. Multiple reports from the opening days of Operation Iraqi Freedom revealed that faulty weapons training and maintenance were the main causes of U.S. casualties and captures: "These malfunctions may have resulted from inadequate individual maintenance and the environment." Soldiers had trouble firing their personal and crew-served weapons, and the main reason cited was poor preventive maintenance. Few things will end a firefight faster and more badly than a weapon that will not shoot! The complex M16A2 rifle needs cleaning and proper lubrication at least once a day in order to properly function. Follow these procedures and those in the technical manual (TM):

CLEANING

Use only the cleaning supplies listed in the *Expendable and Durable Items List* in the back of the TM.

Abrasives and Harsh Chemicals

Avoid using abrasive materials, such as steel wool or commercial scrubbing pads, and harsh chemicals not intended for use on your weapon. This can ruin the finish of the weapon. It can also remove rifling and damage internal parts, either of which can make your weapon inaccurate and ineffective during the mission.

Water

Never clean your weapon under running water, which can force moisture into tight places, resulting in corrosion.

Frequency
In the field, clean your weapon often, at least daily. Even just taking every chance to wipe the weapon's exterior with a clean cloth will help ensure operability.

Disassembly
Do any cleaning that involves disassembly at your level in an enclosed area. Blowing sand and other debris can not only affect your weapon, it can also cause you to lose the parts of the weapon. For parts that must be disassembled beyond your level, such as the trigger assembly, just blow out the dirt or debris.

Magazines and Ammunition
Clean your magazines, but avoid using any lubrication in them or on ammunition. Unload and wipe off your ammunition daily, then disassemble and run a rag through the magazine to prevent jamming.

LUBRICATING
Lubrication reduces friction between metal parts.

Lubricant
You may use only authorized, standard military lubricant for small arms such as cleaner lubricant preservative (CLP). Also, lubricate only internal parts.

Moving Parts
Pay special attention to moving parts like the bolt carrier. Wipe the outside of the weapon dry.

Covers and Caps
Use rifle covers and muzzle caps to keep blowing debris and dust out of the muzzle and ejection port area. Cover mounted machine guns when possible. Keep your rifle's ejection port cover closed and a magazine inserted.

Humid Environments
Keep in mind that in more humid environments such as jungles and swamps you will need to use more lubrication, more often, on all metal parts. Temperature and other extreme weather conditions also factor in.

Desert Environments
Corrosion poses little threat in the desert. Avoid using too much lubrication, because it attracts sand.

Note: Maintain all issued equipment and clothing based on the specific care and maintenance instructions provided.

CHAPTER 3

COMBAT CASUALTY CARE AND PREVENTIVE MEDICINE

Combat casualty care is the treatment administered to a wounded soldier after he has been moved out of an engagement area or the enemy has been suppressed. This level of care can help save life and limb until medical personnel arrive. Soldiers might have to depend upon their own first-aid knowledge and skills to save themselves (self-aid) or another soldier (buddy aid or combat lifesaver skills). This knowledge and training can possibly save a life, prevent permanent disability, or reduce long periods of hospitalization. The only requirement is to know what to do—and what not to do—in certain instances.

Personal hygiene and preventive medicine are simple, commonsense measures that each soldier can perform to protect his health and that of others. Taking these measures can greatly reduce time lost due to disease and nonbattle injury.

SECTION I. COMBAT CASUALTY CARE

The army warfighter doctrine, developed for a widely dispersed and rapidly moving battlefield, recognizes that battlefield constraints limit the number of trained medical personnel available to provide immediate, far-forward care. This section defines combat lifesaver, provides lifesaving measures (first-aid) techniques, and discusses casualty evacuation.

COMBAT LIFESAVER

The role of the combat lifesaver was developed to increase far-forward care to combat soldiers. At least one member—though ideally *every* member of each squad, team, and crew—should be a trained combat lifesaver. The leader is seldom a combat lifesaver, since he will have less time to perform those duties than would another member of his unit.

So what exactly is a combat lifesaver? He is a nonmedical combat soldier. His *secondary* mission is to help the combat medic provide basic emergency care to injured members of his squad, team, or crew, and to aid in evacuating them, mission permitting. He complements, rather than replaces, the combat medic. He receives training in enhanced first aid and selected medical procedures such as initiating intravenous infusions. Combat lifesaver training bridges the first-aid training (self-aid or buddy aid, or SABA) given to all soldiers in basic training, and the more advanced medical training given to Medical Specialists (MOS 91W), also known as combat medics.

The Academy of Health Sciences developed the Combat Lifesaver Course as part of its continuing effort to provide health service support to the army. The current edition of the Combat Lifesaver Course lasts three days. The first day tests the buddy-aid tasks, and the other two days teach and test specific medical tasks.

LIFESAVING MEASURES (FIRST AID)

When a soldier is wounded, he must receive first aid immediately. Most injured or ill soldiers can return to their units to fight or support. This is mainly because they receive appropriate and timely first aid, followed by the best possible medical care. To help ensure this happens, every soldier should have combat lifesaver training on basic lifesaving procedures (Table 3-1).

1. Check for BREATHING: Lack of oxygen, due either to a compromised airway or inadequate breathing, can cause brain damage or death in just a few minutes.

2. Check for BLEEDING: Life can continue only with sufficient blood to carry oxygen to tissues.

3. Check for SHOCK: Unless shock is prevented, first aid performed, and medical treatment provided, death may result, even with an otherwise nonfatal injury.

Table 3-1. First aid.

CHECK FOR BREATHING

Check first to see if the casualty's heart is beating, then to see if he is breathing. The following paragraphs discuss what to do in each possible situation.

React to Stoppage of Heartbeat

If a casualty's heart stops beating, you must immediately seek medical help. *Seconds count!* Stoppage of the heart is soon followed by cessation of respiration, unless that has already happened. Remain calm, but think first, and act quickly. When a casualty's heart stops, he has no pulse. He is unconscious and limp, and his pupils are open wide. When evaluating a casualty, or when performing the preliminary steps of rescue breathing, feel for a pulse. If you *do not* detect a pulse, seek medical help.

Open Airway and Restore Breathing

All humans need oxygen to live. Oxygen breathed into the lungs gets into the bloodstream. The heart pumps the blood, which carries the oxygen throughout the body to the cells, which require a constant supply of oxygen. Without a constant supply of oxygen to the cells in the brain, we can suffer permanent brain damage, paralysis, or death.

Assess and Position Casualty

To assess the casualty, do the following:

1. *Check* for responsiveness (A, Figure 3-1). Establish whether the casualty is conscious by gently shaking him and asking, "Are you OK?"
2. *Call* for help, if appropriate (B, Figure 3-1).
3. *Position* the unconscious casualty so that he is lying on his back and on a firm surface (C, Figure 3-1).

WARNING

★ **If the casualty is lying on his chest (prone), cautiously roll him as a unit, so that his body does not twist. Twisting him could complicate a back, neck, or spinal injury.**

4. Straighten his legs. Take the arm nearest to you and move it so that it is straight and above his head. Repeat for the other arm.
5. Kneel beside the casualty with your knees near his shoulders. Leave room to roll his body (B, Figure 3-1). Place one hand behind his head and neck for support. With your other hand, grasp him under his far arm (C, Figure 3-1).

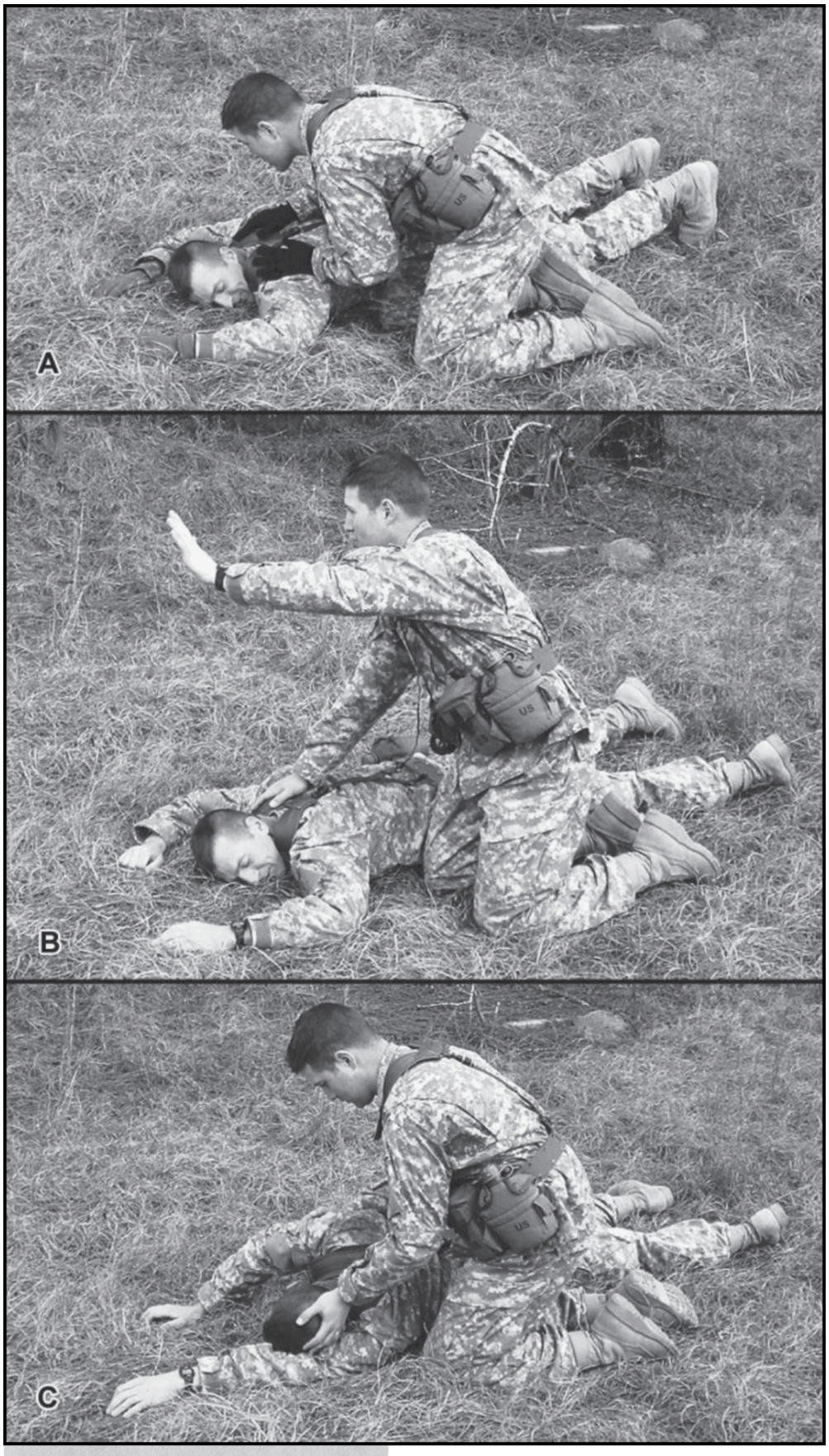


Figure 3-1. Assessment.

6. Roll him towards you with a steady, even pull. Keep his head and neck in line with his back.
7. Return his arms to his side. Straighten his legs, and reposition yourself so that you are kneeling at the level of his shoulders.
8. If you suspect a neck injury, and you are planning to use the jaw-thrust technique, then kneel at the casualty's head while looking towards his feet.

Open Airway of Unconscious or Nonbreathing Casualty

The tongue is the single most common airway obstruction (Figure 3-2). In most cases, just using the head-tilt/chin-lift technique can clear the airway. This pulls the tongue away from the air passage (Figure 3-3).

Figure 3-2. Airway blocked by tongue.

Figure 3-3. Airway opened by extending neck.

Call for help, and then position the casualty. Move (roll) him onto his back (C, Figure 3-1). Perform a finger sweep. If you see foreign material or vomit in the casualty's mouth, promptly remove it, but avoid spending much time doing so. Open the airway using the jaw-thrust or head-tilt/chin-lift technique.

CAUTION

★ **Although the head-tilt/chin-lift technique is an important procedure in opening the airway, take extreme care with it, because using too much force while performing this maneuver can cause more spinal injury. In a casualty with a suspected neck injury or severe head trauma, the safest approach to opening the airway is the jaw-thrust technique because, in most cases, you can do it without extending the casualty's neck.**

Perform Jaw-Thrust Technique

Place your hands on both sides of the angles of the casualty's lower jaw and lift with both hands. Displace the jaw forward and up (Figure 3-4). Your elbows should rest on the surface where the casualty is lying. If his lips close, you can use your thumb to retract his lower lip. If you have to give mouth-to-mouth, then close his nostrils by placing your cheek tightly against them. Carefully support his head without tilting it backwards or turning it from side to side. This technique is the safest, and thus the first, to use to open the airway of a casualty who has a suspected neck injury. Why? Because you can usually do it *without* extending his neck. However, if you are having a hard time keeping his head from moving, you might have to try tilting his head back *very* slightly.

Figure 3-4. Jaw-thrust technique.

Perform Head-Tilt/Chin-Lift Technique

Place one palm on the casualty's forehead and apply firm, backward pressure to tilt his head back. Place the fingertips of your other hand under the bony part of his lower jaw and then lift, bringing his chin forward. Avoid using your thumb to lift his chin (Figure 3-5).

Figure 3-5. Head-tilt/chin-lift technique.

WARNING

★ Avoid pressing too deeply into the soft tissue under the casualty's chin, because you might obstruct his airway.

Check for Breathing while Maintaining Airway

After opening the casualty's airway, you must keep it open. Often this is enough to let the casualty breathe properly. Failure to maintain the open airway will keep the casualty from receiving sufficient oxygen. While maintaining an open airway, check for breathing by observing the casualty's chest, and then, within a period of three to five seconds (Figure 3-6) —

Figure 3-6. Check for breathing.

1. *Look* for his chest to rise and fall.
2. *Listen* for sound of breathing by placing your ear near his mouth.
3. *Feel* for the flow of air on your cheek.
4. *Perform* rescue breathing if he fails to resume breathing spontaneously.

Note: If the casualty resumes breathing, monitor and maintain the open airway. Ensure he is transported to a medical treatment facility as soon as possible. Although the casualty might be trying to breathe, his airway might still be obstructed. If so, open his airway (remove the obstruction) and keep the airway open (maintain his airway).

Perform Rescue Breathing or Artificial Respiration

If the casualty fails to promptly resume adequate spontaneous breathing after the airway is open, you must start rescue breathing (artificial respiration, or mouth-to-mouth). Remain calm, but think and act quickly. The sooner you start rescue breathing, the more likely you are to restore his breathing. If you are not sure if the casualty is breathing, give him artificial respiration anyway. It cannot hurt him. If he is breathing, you can see and feel his chest move and, if you put your hand or ear close to his mouth and nose, you can hear him expelling air. The preferred method of rescue breathing is mouth-to-mouth, but you cannot always use it. For example, if the casualty has a severe jaw fracture or mouth wound, or if his jaws are tightly closed by spasms, you should use the mouth-to-nose method instead.

Use Mouth-to-Mouth Method

In this best-known method of rescue breathing, inflate the casualty's lungs with air from yours. You can do this by blowing air into his mouth. If the casualty is not breathing, place your hand on his forehead and pinch his nostrils together with the thumb and index finger of the hand in use. With the same hand, exert pressure on his forehead to keep his head tilted backwards, and to maintain an open airway. With your other hand, keep your fingertips on the bony part of his lower jaw near his chin and lift (Figure 3-5).

Note: If you suspect the casualty has a neck injury and you are using the jaw-thrust technique, close his nostrils by placing your cheek tightly against them.

Take a deep breath and seal your mouth (airtight) around the casualty's mouth (Figure 3-7). If he is small, cover both his nose and mouth with your mouth, and then seal your lips against his face.

Figure 3-7. Rescue breathing.

Blow two full breaths into the casualty's mouth (1 to 1½ seconds each), taking a fresh breath of air each time before you blow. Watch from the corner of your eye for the casualty's chest to rise. If it does, then you are getting enough air into his lungs. If it fails to rise, then do the following:

1. Take corrective action immediately by reestablishing the airway. Ensure no air is leaking from around your mouth or from the casualty's pinched nose.
2. Try (again) to ventilate him.
3. If his chest still fails to rise, take the necessary action to open an obstructed airway.

If you are still unable to ventilate the casualty, reposition his head and repeat rescue breathing. The main reason ventilation fails is improper chin and head positioning. If you cannot ventilate the casualty after you reposition his head, then move on to foreign-body airway-obstruction maneuvers.

If, after you give two slow breaths, the casualty's chest rises, then see if you can find a pulse. Feel on the side of his neck closest to you by placing the index and middle fingers of your hand on the groove beside his Adam's apple (carotid pulse; Figure 3-8). Avoid using your thumb to take a pulse because that could cause you to confuse your own pulse for his. Maintain the airway by keeping your other hand on the casualty's forehead. Allow five to ten seconds to determine if there is a pulse.

Figure 3-8. Placement of fingers to detect pulse.

If you see signs of circulation, you find a pulse, and the casualty has started breathing, *stop* and allow the casualty to breathe on his own. If possible, keep him warm and comfortable.

If you find a pulse but the casualty is unable to breathe, continue rescue breathing until told to cease by medical personnel.

If you fail to find a pulse, seek medical personnel for help as soon as possible.

Use Mouth-to-Nose Method

Use this method if you cannot perform mouth-to-mouth rescue breathing. Normally, the reason you cannot is that the casualty has a severe jaw fracture or mouth wound, or, because his jaws are tightly closed by spasms. The mouth-to-nose method is the same as the mouth-to-mouth method except that you blow into the *nose* while you hold the *lips* closed, keeping one hand at the chin. Then, you remove your mouth to let the casualty exhale passively. You might have to separate the casualty's lips to allow the air to escape during exhalation.

React to Airway Obstructions

For oxygen to flow to and from the lungs, the upper airway must be unobstructed. Upper-airway obstruction can cause either partial or complete airway blockage. Upper-airway obstructions often occur because—

1. The casualty's tongue falls back into his throat while he is unconscious.
2. His tongue falls back and obstructs the airway.
3. He was unable to swallow an obstruction.
4. He regurgitated the contents of his stomach, and they blocked his airway.
5. He has suffered blood clots due to head and facial injuries.

Note: For an injured or unconscious casualty, correctly position him and then create and maintain an open airway.

Determine Degree of Obstruction
The airway may be partially or completely obstructed.

Partial
The person might still have an air exchange. If he has enough, then he can cough forcefully, even though he might wheeze between coughs. Instead of interfering, encourage him to cough up the object on his own. If he is not getting enough air, his coughing will be weak, and he might be making a high-pitched noise between coughs. He might also show signs of shock. Help him and treat him as though he had a complete obstruction.

Complete
A complete obstruction (no air exchange) is indicated if the casualty cannot speak, breathe, or cough at all. He might clutch his neck and move erratically. In an unconscious casualty, a complete obstruction is also indicated if, after opening his airway, you cannot ventilate him.

Open Obstructed Airway, Casualty Lying Down or Unresponsive
Sometimes you must expel an airway obstruction in a casualty who is lying down, who becomes unconscious, or who is found unconscious (cause unknown; Figure 3-9):

Figure 3-9. Abdominal thrust on unresponsive casualty.

1. If a conscious casualty who is choking becomes unresponsive—
    a. Call for help.
    b. Open the airway.
    c. Perform a finger sweep.
    d. Try rescue breathing. If an airway blockage prevents this, remove the airway obstruction.
2. If a casualty is unresponsive when you find him (cause unknown)—
    a. Assess or evaluate the situation.
    b. Call for help.
    c. Position the casualty on his back.
    d. Open the airway.
    e. Establish breathlessness.
    f. Try to perform rescue breathing. If still unable to ventilate the casualty, perform six to ten manual (abdominal or chest) thrusts.

3. To perform the abdominal thrusts—
    a. Kneel astride the casualty's thighs.
    b. Place the heel of one hand against the casualty's abdomen, in the midline slightly above the navel, but well below the tip of the breastbone.
    c. Place your other hand on top of the first one.
    d. Point your fingers toward the casualty's head.
    e. Use your body weight to press into the casualty's abdomen with a quick, forward and upward thrust.
    f. Deliver each thrust quickly and distinctly.
    g. Repeat the sequence of abdominal thrusts, finger sweep, and rescue breathing (try to ventilate) as long as necessary to remove the object from the obstructed airway.
    h. If the casualty's chest rises, check for a pulse.
4. To perform chest thrusts—
    a. Place the unresponsive casualty on his back, face up, and open his mouth.
    b. Kneel close to his side.
    c. Locate the lower edge of his ribs with your fingers.
    d. Run your fingers up along the rib cage to the notch (A, Figure 3-10).
    e. Place your middle finger on the notch, and your index finger next to your middle finger, on the lower edge of his breastbone.
    f. Place the heel of your other hand on the lower half of his breastbone, next to your two fingers (B, Figure 3-10).

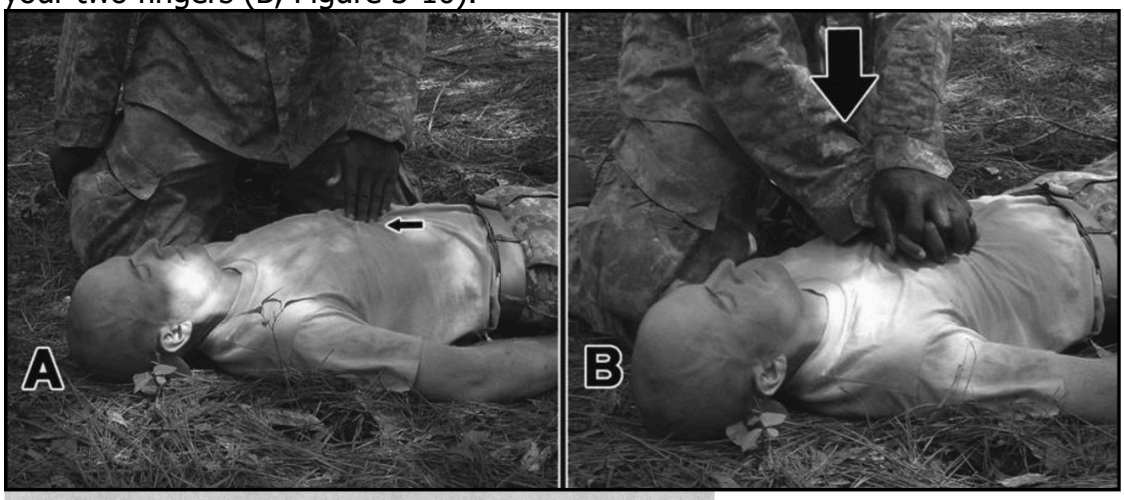


Figure 3-10. Hand placement for chest thrust.

    g. Remove your fingers from the notch and place that hand on top of your hand on his breastbone, extending or interlocking your fingers.
    h. Straighten and lock your elbows, with your shoulders directly above your hands. Be careful to avoid bending your elbows, rocking, or letting your shoulders sag. Apply enough pressure to depress the breastbone 1½ to 2 inches, and then release the pressure completely. Repeat six to ten times. Deliver each thrust quickly and distinctly. Figure 3-11 shows another view of the breastbone being depressed.

Figure 3-11. Breastbone depressed 1 1/2 to 2 inches.

i. Repeat the sequence of chest thrust, finger sweep, and rescue breathing as long as necessary to clear the object from the obstructed airway.
j. If the casualty's chest rises, check for a pulse.

5. If you still cannot administer rescue breathing due to an airway obstruction, remove the obstruction:
   a. Place the casualty on his back, face up.
   b. Turn him all at once (avoid twisting his body).
   c. Call for help.
   d. Perform finger sweep.
   e. Keep him face up.
   f. Use the tongue-jaw lift to open his mouth.
   g. Open his mouth by grasping both his tongue and lower jaw between your thumb and fingers and lift (tongue-jaw lift; Figure 3-12).
   h. If you cannot open his mouth, cross your fingers and thumb (crossed-finger method), and push his teeth apart. To do this, press your thumb against his upper teeth, and your finger against his lower teeth (Figure 3-13).

Figure 3-12. Opening of casualty's mouth, tongue-jaw lift.

Figure 3-13. Opening of casualty's mouth, crossed-finger method.

i. Insert the index finger of your other hand down along the inside of his cheek to the base of his tongue. Use a hooking motion from the side of the mouth toward the center to dislodge the foreign body (Figure 3-14).

Figure 3-14. Use of finger to dislodge a foreign body.

DANGER

★ Take care not to force the object deeper into the airway by pushing it with your finger.

CHECK FOR BLEEDING

Stop Bleeding and Protect Wound

The longer a soldier bleeds from a major wound, the less likely he will survive it (FM 4-25.11 [*First Aid*] covers first aid for open, abdominal, chest, and head wounds.) You must promptly stop the external bleeding.

Clothing

In evaluating him for location, type, and size of wound or injury, cut or tear the casualty's clothing and carefully expose the entire area of the wound. This is necessary to properly visualize the injury and avoid further contamination. To avoid further injury, leave in place any clothing that is stuck to the wound. *Do not* touch the wound, and keep it as clean as possible.

Entrance and Exit Wounds

Before applying the dressing, carefully examine the casualty to determine if there is more than one wound. A missile may have entered at one point and exited at another point. An exit wound is usually *larger* than its entrance wound.

DANGER

★ **If the missile lodges in the body (fails to exit), *DO NOT* try to remove it, and *DO NOT* probe the wound. Apply a dressing. If an object is extending from (impaled in) the wound, leave it. *DO NOT* try to remove it. Instead, take the following steps to prevent further injury:**

6. **In order to prevent the object from embedding more deeply, or from worsening the wound, use dressings or other clean, bulky materials to build up the area around the object.**
7. **Apply a supporting bandage over the bulky materials to hold them in place.**

Monitor the casualty continually for development of conditions that may require you to perform basic lifesaving measures such as clearing his airway and performing mouth-to-mouth resuscitation.

Check all open (or penetrating) wounds for a point of entry and exit, with first-aid measures applied accordingly.

Emergency Trauma Dressing

Remove the emergency bandage from the wounded soldier's pouch (Figure 3-15). (*Do not* use the one in your pouch.)

Figure 3-15. Emergency bandage.

Place the pad on the wound, white side down, and wrap the elastic bandage around the injured limb or body part (Figure 3-16). Insert the elastic bandage into the pressure bar (Figure 3-17). Tighten the elastic bandage (Figure 3-18). Pull back, forcing the pressure bar down onto the pad (Figure 3-19). Wrap the elastic bandage tightly over the pressure bar and wrap over all the edges of the pad (Figure 3-20). Secure the hooking ends of the closure bar into the elastic bandage (Figure 3-21). *Do not* create a tourniquet-like effect.

Figure 3-16. Application of pad to wound.

Figure 3-17. Insertion of bandage into pressure bar.

Figure 3-18. Tightening of bandage.

Figure 3-19. Pressure of bar into bandage.

Figure 3-20. Wrapping of bandage over pressure bar.

Figure 3-21. Securing of bandage.

Field Dressing

Remove the casualty's field dressing from the wrapper and grasp the tails of the dressing with both hands (Figure 3-22).

Figure 3-22. Grasping of dressing tails with both hands.

WARNING

★ *Do not* touch the white (sterile) side of the dressing.

★ *Do not* allow that side of the dressing to touch any surface other than the wound.

Hold the dressing directly over the wound with the white side down. Open the dressing (Figure 3-23) and place it directly over the wound (Figure 3-24). Hold the dressing in place with one hand. Use the other hand to wrap one of the tails around the injured part, covering about half the dressing (Figure 3-25). Leave enough of the tail for a knot. If the casualty is able, he can help by holding the dressing in place.

Figure 3-23. Pulling open of dressing.

Figure 3-24. Placement of dressing directly on wound.

Figure 3-25. Wrapping of dressing tail around injured part.

Wrap the other tail in the opposite direction until the rest of the dressing is covered. The tails should seal the sides of the dressing to keep foreign material from getting under it. Tie the tails into a nonslip knot over the outer edge of the dressing (Figure 3-26). *Do not tie the knot over the wound*. In order to allow blood to flow to the rest of the injured limb, tie the dressing firmly enough to prevent it from slipping but without causing a tourniquet effect. That is, the skin beyond the injury should not become cool, blue, or numb.

Figure 3-26. Tails tied into nonslip knot.

Manual Pressure

If bleeding continues after you apply the sterile field dressing, apply direct pressure to the dressing for five to ten minutes (Figure 3-27). If the casualty is conscious and can follow instructions, you can ask him to do this himself. Elevate an injured limb slightly above the level of the heart to reduce the bleeding (Figure 3-28).

Figure 3-27. Application of direct manual pressure.

Figure 3-28. Elevation of injured limb.

WARNING

★ Elevate a suspected fractured limb *only* after properly splinting it.

If the bleeding stops, check for shock, and then give first aid for that as needed. If the bleeding continues, apply a pressure dressing.

Pressure Dressing

If bleeding continues after you apply a field dressing, direct pressure, and elevation, then you must apply a pressure dressing. This helps the blood clot, and it compresses the open blood vessel. Place a wad of padding on top of the field dressing directly over the wound (Figure 3-29). Keep the injured extremity elevated.

Figure 3-29. Wad of padding on top of field dressing.

Note: Improvise bandages from strips of cloth such as T-shirts, socks, or other garments.

Place an improvised dressing (or cravat, if available) over the wad of padding (Figure 3-30). Wrap the ends tightly around the injured limb, covering the original field dressing (Figure 3-31).

Figure 3-30. Improvised dressing over wad of padding.

Figure 3-31. Ends of improvised dressing wrapped tightly around limb.

Tie the ends together in a nonslip knot, directly over the wound site (Figure 3-32). *Do not* tie so tightly that it has a tourniquet-like effect. If bleeding continues and all other measures fail, or if the limb is severed, then apply a tourniquet, but do so *only as a last resort*. When the bleeding stops, check for shock, and give first aid for that, if needed.

Figure 3-32. Ends of improvised dressing tied together in nonslip knot.

Check fingers and toes periodically for adequate circulation. Loosen the dressing if the extremity becomes cool, blue, or numb. If bleeding continues, and all other measures fail—application of dressings, covering of wound, direct manual pressure, elevation of limb above heart level, application of pressure dressing while maintaining limb elevation—then apply digital pressure.

Digital Pressure

Use this method when you are having a hard time controlling bleeding, before you apply a pressure dressing, or where pressure dressings are unavailable. Keep the limb elevated and direct pressure on the wound. At the same time, press your fingers, thumbs, or whole hand where a main artery supplying the wounded area lies near the surface or over bone (Figure 3-33). This might help shut off, or at least slow, the flow of blood from the heart to the wound.

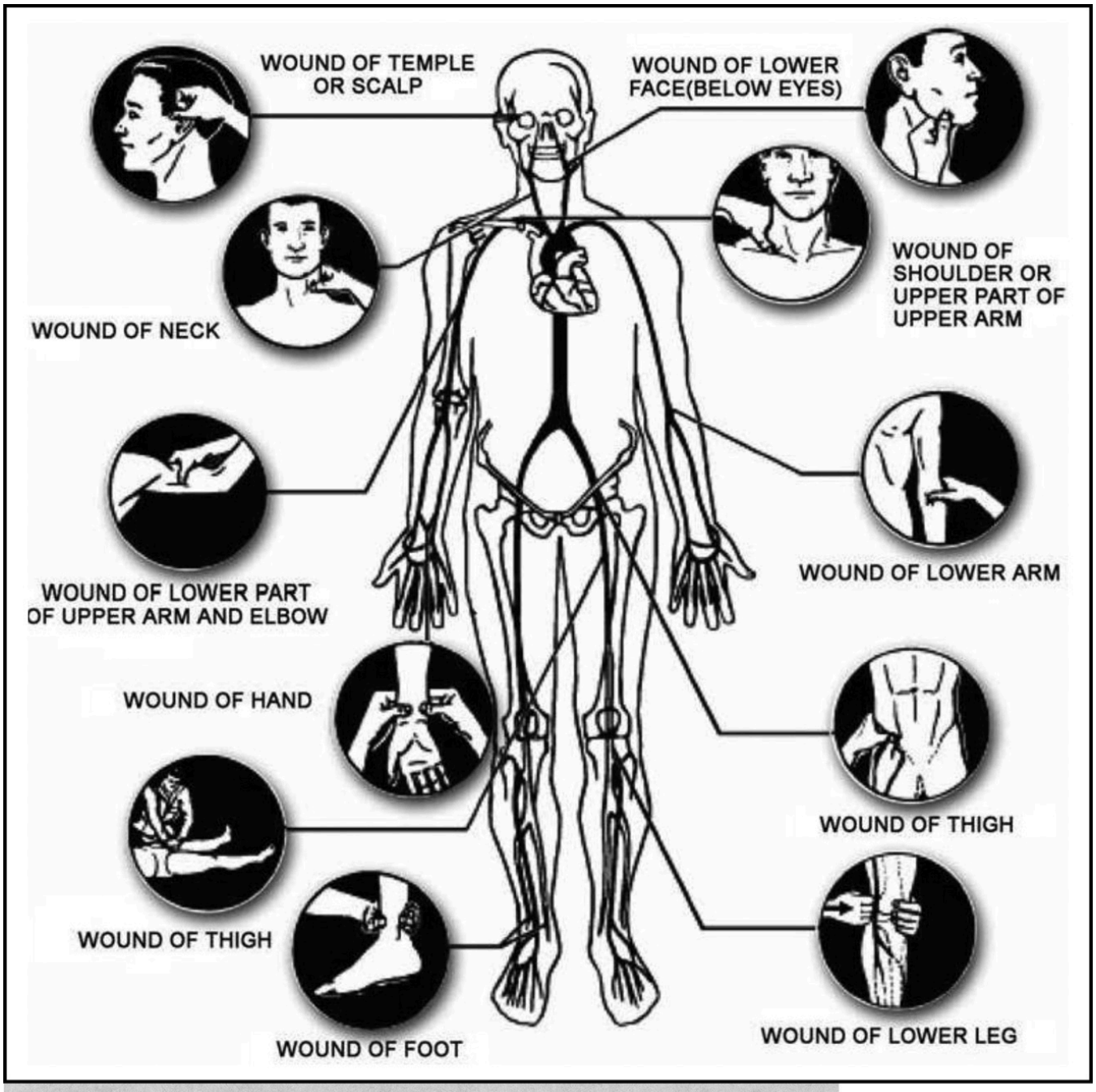
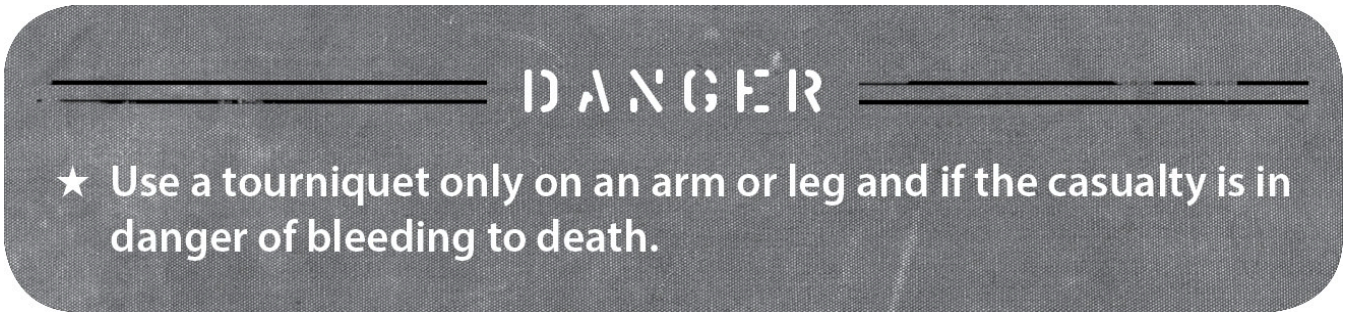


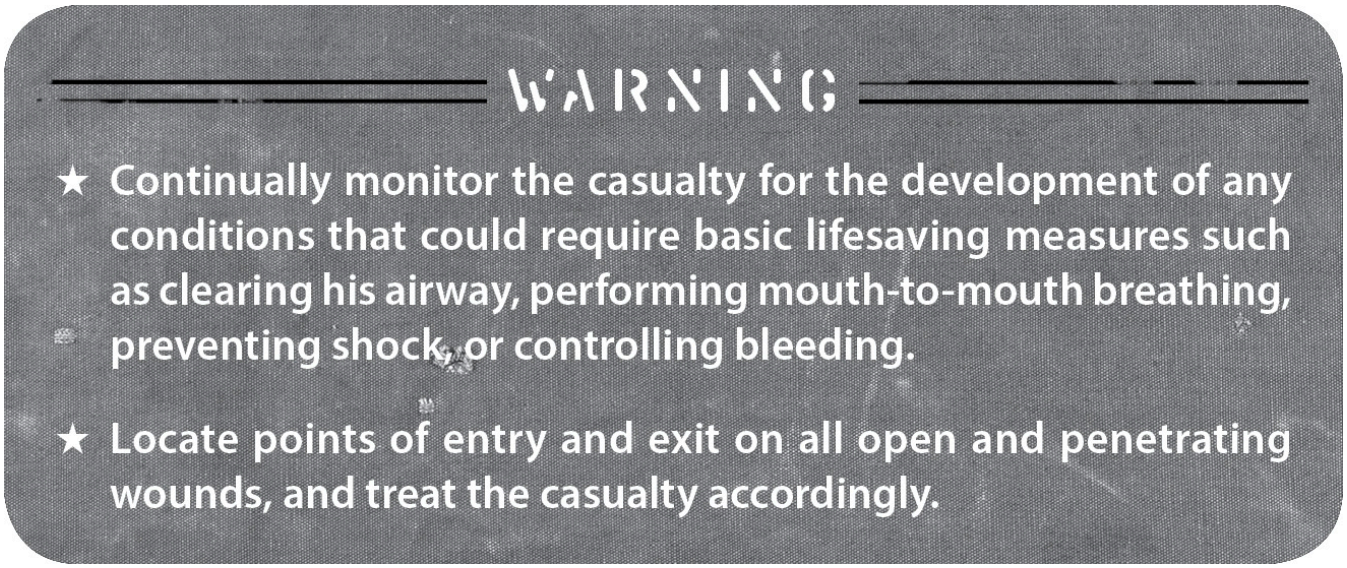
Figure 3-33. Digital pressure (fingers, thumbs, or hands).

Tourniquet

A tourniquet is a constricting band placed around an arm or leg to control bleeding. A soldier whose arm or leg has been completely amputated might not be bleeding when first discovered, but you should apply a tourniquet anyway. The body initially stops bleeding by contracting or clotting the blood vessels. However, when the vessels relax, or if a clot is knocked loose when the casualty is moved, the bleeding can restart. Bleeding from a major artery of the thigh, lower leg, or arm, and bleeding from multiple arteries, both of which occur in a traumatic amputation, might be more than you can control with manual pressure. If even

under firm hand pressure the dressing gets soaked with blood, and if the wound continues to bleed, then you *must* apply a tourniquet.





Avoid using a tourniquet unless a pressure dressing fails to stop the bleeding, or unless an arm or leg has been cut off. Tourniquets can injure blood vessels and nerves. Also, if left in place too long, a tourniquet can actually cause the loss of an arm or leg. However, that said, once you apply a tourniquet, you have to leave it in place and get the casualty to the nearest medical treatment facility (MTF) ASAP. *Never* loosen or release a tourniquet yourself after you have applied one, because that could cause severe bleeding and lead to shock.

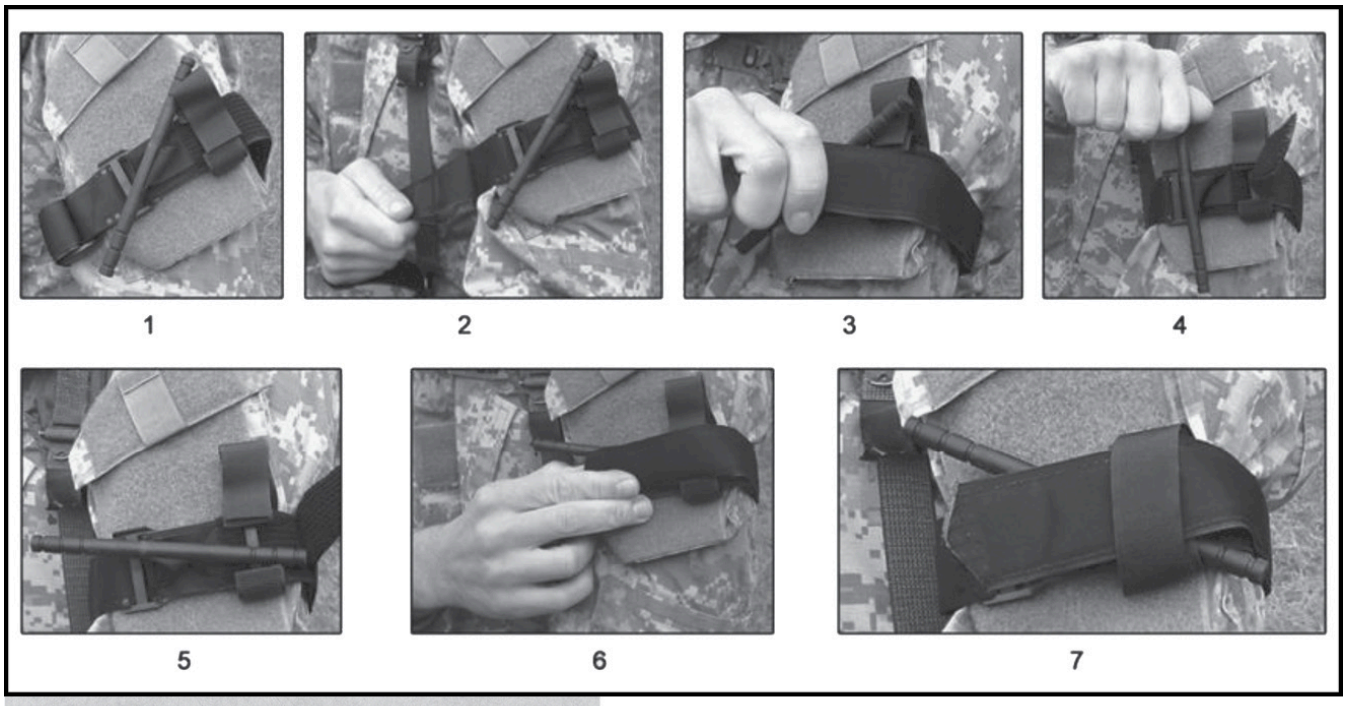


Figure 3-34. Band pulled tight.

Combat Application Tourniquet (CAT)

1. The CAT is packaged for one-handed use. Slide the wounded extremity through the loop of the CAT tape (1, Figure 3-34).
2. Position the CAT two inches above a bleeding site that is above the knee or elbow. Pull the free-running end of the tape tight, and fasten it securely back on itself (2, Figure 3-34).
3. Do not affix the band past the windlass clip (3, Figure 3-34).
4. Twist the windlass rod until the bleeding stops (4, Figure 3-34).
5. Lock the rod in place with the windlass clip (5, Figure 3-34).
6. For small extremities, continue to wind the tape around the extremity and over the windlass rod (6, Figure 3-34).
7. Grasp the windlass strap, pull it tight, and adhere it to the hook-pile tape on the windlass clip (7, Figure 3-34). The CAT is now ready for transport.

The improved first-aid kit (IFAK) allows self-aid and buddy-aid (SABA) interventions for extremity hemorrhages and airway compromises (Figure 3-35). The pouch and insert are both Class II items. Expendables are Class VIII.

WARNING

★ The one-handed method for upper extremities may not be completely effective on lower extremities.

★ Ensure everyone receives familiarization and training on both methods of application.

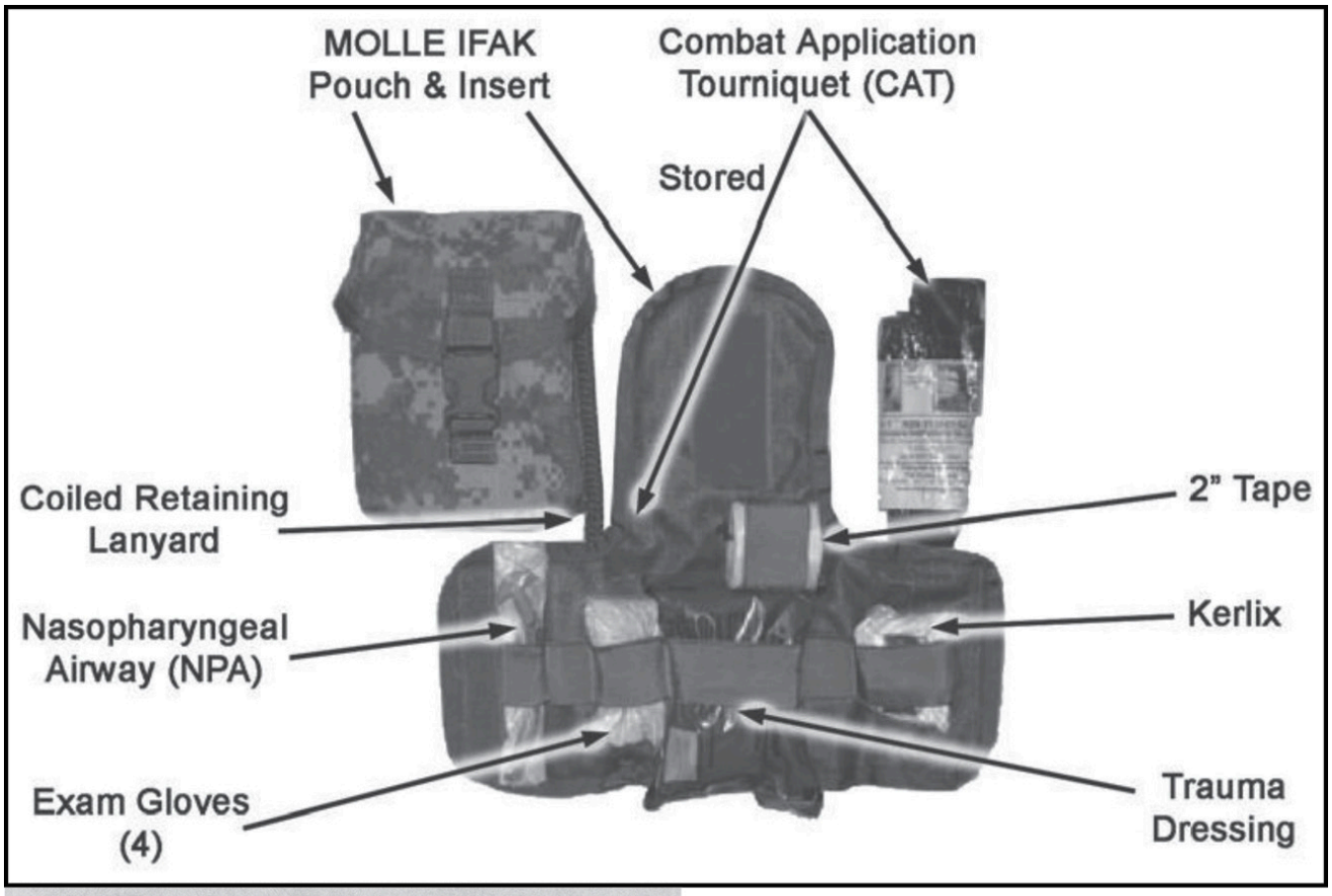


Figure 3-35. Improved first-aid kit.

Improvised Tourniquet

In the absence of a specially designed tourniquet, you can make one from any strong, pliable material such as gauze or muslin bandages, clothing, or cravats. Use your improvised tourniquet with a rigid, stick-like object. To minimize skin damage, the improvised tourniquet must be at least two inches wide.

WARNING

★ **The tourniquet must be easily identified or easily seen. Do not use wire, shoestring, or anything else that could cut into flesh, for a tourniquet band.**

Placement

To position the makeshift tourniquet, place it around the limb, between the wound and the body trunk, or between the wound and the heart. Never place it directly over a wound, a fracture, or joint. For maximum effectiveness, place it on the upper arm or above the knee on the thigh (Figure 3-36).

Figure 3-36. Tourniquet above knee.

Pad the tourniquet well. If possible, place it over a smoothed sleeve or trouser leg to keep the skin from being pinched or twisted. If the tourniquet is long enough, wrap it around the limb several times, keeping the material as flat as possible. Damaging the skin may deprive the surgeon of skin required to cover an amputation. Protecting the skin also reduces the casualty's pain.

Application

To apply the tourniquet, tie a half knot, which is the same as the first part of tying a shoelace. Place a stick, or other rigid object, on top of the half knot (Figure 3-37).

Figure 3-37. Rigid object on top of half knot.

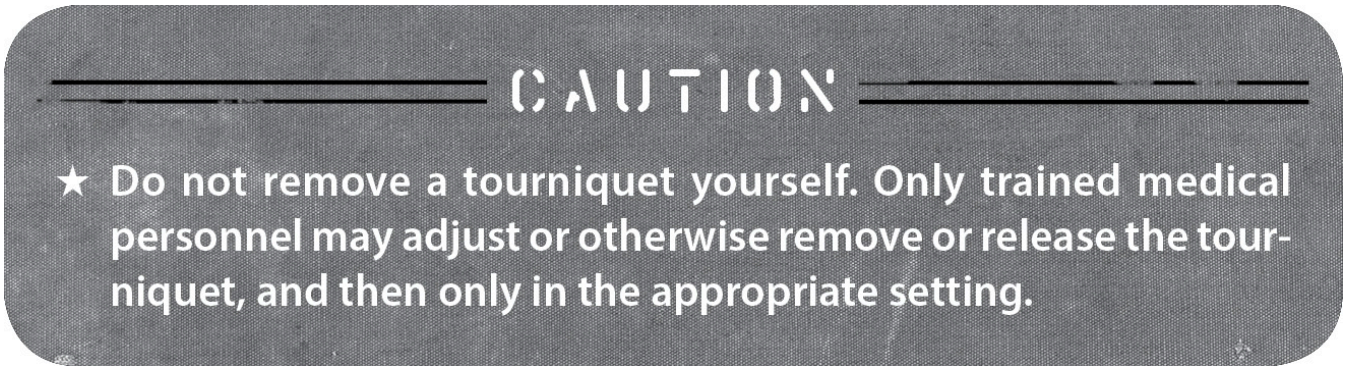
Tie a full knot over the stick and twist the stick until the tourniquet tightens around the limb or the bright red bleeding stops (Figure 3-38). In the case of amputation, dark oozing blood may continue for a short time. This is the blood trapped in the area between the wound and tourniquet.

Figure 3-38. Tourniquet knotted over rigid object and twisted.

To fasten the tourniquet to the limb, loop the free ends of the tourniquet over the ends of the stick. Bring the ends around the limb to keep the stick from loosening. Tie the ends together on the side of the limb (Figure 3-39).

Figure 3-39. Free ends tied on side of limb.

You can use other means to secure the stick. Just make sure the material remains wound around the stick and that no further injury is possible. If possible, save and transport any severed (amputated) limbs or body parts with (but out of sight of) the casualty. Never cover the tourniquet. Leave it in full view. If the limb is missing (total amputation), apply a dressing to the stump. All wounds should have a dressing to protect the wound from contamination. Mark the casualty's forehead with a "T" and the time to show that he has a tourniquet. If necessary, use the casualty's blood to make this mark. Check and treat for shock, and then seek medical aid.



SHOCK

The term shock means various things. In medicine, it means a collapse of the body's cardiovascular system, including an inadequate supply of blood to the body's tissues. Shock stuns and weakens the body. When the normal blood flow in the body is upset, death can result. Early recognition and proper first aid may save the casualty's life.

Causes and Effects of Shock

The three basic effects of shock are—

1. Heart is damaged and fails to pump.
2. Blood loss (heavy bleeding) depletes fluids in vascular system.
3. Blood vessels dilate (open wider), dropping blood pressure to dangerous level.

Shock might be caused by—

- Dehydration.
- Allergic reaction to foods, drugs, insect stings, and snakebites.
- Significant loss of blood.
- Reaction to sight of wound, blood, or other traumatic scene.
- Traumatic injuries.
- Burns.
- Gunshot or shrapnel wounds.
- Crush injuries.
- Blows to the body, which can break bones or damage internal organs.

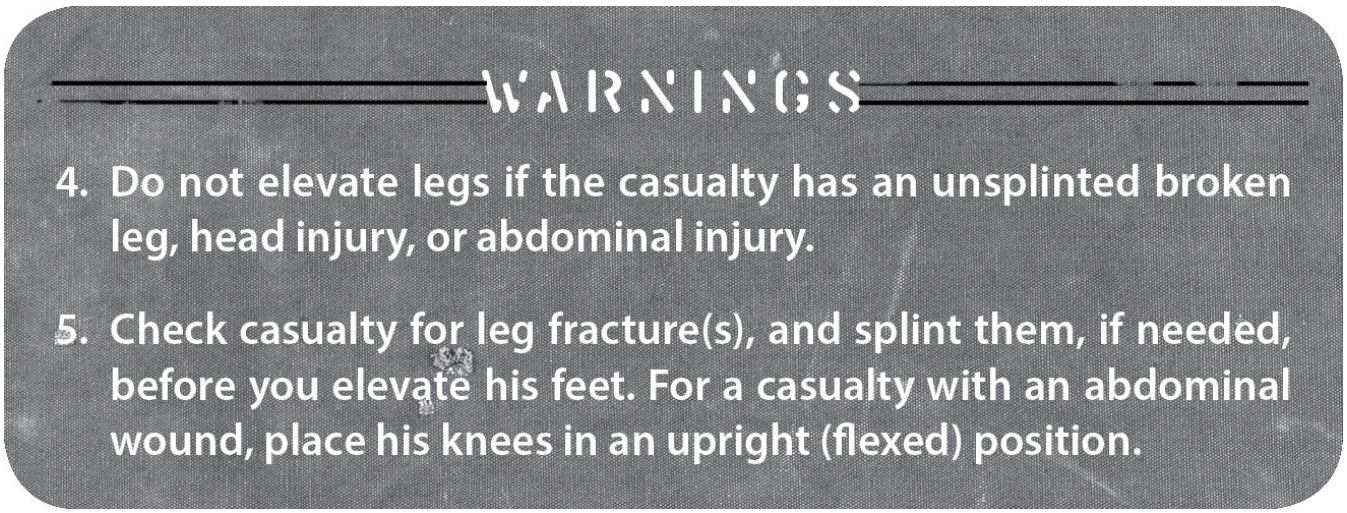
- Head injuries.
- Penetrating wounds such as from knife, bayonet, or missile.

Signs and Symptoms of Shock
Examine the casualty to see if he has any of the following signs and symptoms:

- Sweaty but cool (clammy) skin.
- Weak and rapid pulse.
- (Too) rapid breathing.
- Pale or chalky skin tone.
- Cyanosis (blue) or blotchy skin, especially around the mouth and lips.
- Restlessness or nervousness.
- Thirst.
- Significant loss of blood.
- Confusion or disorientation.
- Nausea, vomiting, or both.

First-Aid Measures for Shock
First-aid procedures for shock in the field are the same ones performed to prevent it. When treating a casualty, always assume the casualty is in shock, or will be shortly. Waiting until the signs of shock are visible could jeopardize the casualty's life.

Casualty Position
Never move the casualty, or his limbs, if you suspect he has fractures and they have not yet been splinted. If you have cover and the situation permits, move the casualty to cover. Lay him on his back. A casualty in shock from a chest wound, or who is having trouble breathing, might breathe easier sitting up. If so, let him sit up, but monitor him carefully, in case his condition worsens. Elevate his feet higher than the level of his heart. Support his feet with a stable object, such as a field pack or rolled-up clothing, to keep them from slipping off where you have them elevated.



Loosen clothing at the neck, waist, or wherever it might be binding.

Prevent the casualty from chilling or overheating. The key is to maintain normal body temperature. In cold weather, place a blanket or like item over and under him to keep him warm and prevent chilling. However, if a tourniquet has been applied, leave it exposed (if possible). In hot weather, place the casualty in the shade and protect him from becoming chilled; however, avoid the excessive use of blankets or other coverings. Calm the casualty. Throughout the entire procedure of providing first aid for a casualty, you should reassure the casualty and keep him calm. This can be done by being authoritative (taking charge) and by showing self-confidence. Assure the casualty that you are there to help him. Seek medical aid.

Food and Drink
When providing first aid for shock, *never* give the casualty food or drink. If you must leave the casualty, or if he is unconscious, turn his head to the side to prevent him from choking if he vomits.

Casualty Evaluation
Continue to evaluate the casualty until medical personnel arrives or the casualty is transported to an MTF.

CASUALTY EVACUATION

Medical evacuation of the sick and wounded (with en route medical care) is the responsibility of medical personnel who have been provided special training and equipment. Therefore, wait for some means of medical evacuation to be provided unless a good reason for you to transport a casualty arises. When the situation is urgent and you are unable to obtain medical assistance or know that no medical evacuation assets are available, you will have to transport the casualty. For this reason, you must know how to transport him without increasing the seriousness of his condition.

Transport by litter is safer and more comfortable for a casualty than manual carries. It is also easier for you as the bearer(s). However, manual transportation might be the only feasible method, due to the terrain or combat situation. You might have to do it to save a life. As soon as you can, transfer the casualty to a litter as soon as you find or can improvise one.

MANUAL CARRIES

When you carry a casualty manually, you must handle him carefully and correctly to prevent more serious or possibly fatal injuries. Situation permitting, organize the transport of the casualty, and avoid rushing. Perform each movement as deliberately and gently as possible. Avoid moving a casualty until the type and extent of his injuries are evaluated, and the required first aid administered. Sometimes, you will have to move the casualty immediately, for example, when he is trapped in a burning vehicle. Manual carries are tiring and can increase the severity of the casualty's injury, but they might be required to save his life. Two-man carries are preferred, because they provide more comfort to the casualty, are less likely to aggravate his injuries, and are less tiring for the bearers. How far you can carry a casualty depends on many factors, such as—

- Nature of the casualty's injuries.
- Your (the bearer's or bearers') strength and endurance.
- Weight of the casualty.
- Obstacles encountered during transport (natural or man-made).
- Type of terrain.

ONE-MAN CARRIES

Use these carries when only one bearer is available to transport the casualty:

Fireman's Carry

This is one of the easiest ways for one person to carry another. After an unconscious or disabled casualty has been properly positioned (rolled onto his abdomen), raise him from the ground, and then support him and place him in the carrying position (Figure 3-40). Here's what you do:

Figure 3-40. Fireman's carry.

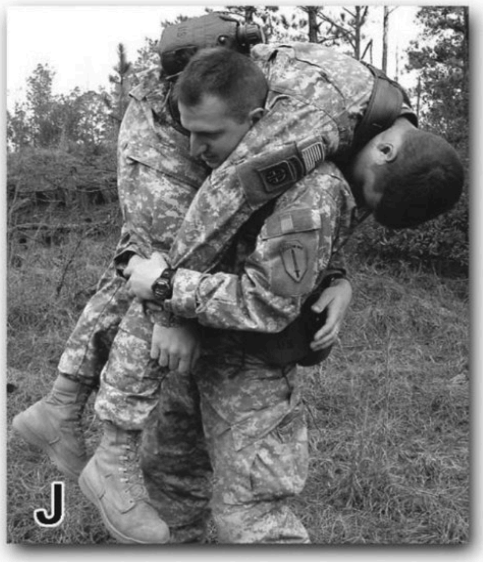


Figure 3-40. Fireman's carry (continued).

A. Position the casualty by rolling him onto his abdomen and straddle him. Extend your hands under his chest and lock them together (A, Figure 3-40).
B. Lift him to his knees as you move backward (B, Figure 3-40).
C. Continue to move backward, straightening his legs and locking his knees (C, Figure 3-40).
D. Walk forward, bringing him to a standing position. Tilt him slightly backward to keep his knees from buckling (D, Figure 3-40).
E. Keep supporting him with one arm, and then free your other arm, quickly grasp his wrist, and raise his arm high. Immediately pass your head under his raised arm, releasing the arm as you pass under it (E, Figure 3-40).
F. Move swiftly to face the casualty and secure your arms around his waist. Immediately place your foot between his feet, and spread them apart about six to eight inches (F, Figure 3-40).
G. Grasp the casualty's wrist, and raise his arm high over your head (G, Figure 3-40).
H. Bend down and pull the casualty's arm over and down on your shoulder, bringing his body across your shoulders. At the same time, pass your arm between his legs (H, Figure 3-40).
I. Grasp the casualty's wrist with one hand, and place your other hand on your knee for support (I, Figure 3-40).
J. Rise with the casualty positioned correctly. Your other hand should be free (J, Figure 3-40).

Alternate Fireman's Carry

Use this carry only when you think it is safer due to the location of the casualty's wounds. When you use the alternate carry, take care to keep the casualty's head from snapping back and injuring his neck. You can also use this method to raise a casualty from the ground for other one-man carries. First, kneel on both knees at the casualty's head and face his feet. Extend your hands under his armpits, down his sides, and across his back (A, Figure 3-41). Second, as you rise, lift the casualty to his knees. Then secure a lower hold and raise him to a standing position with his knees locked (B, Figure 3-41).

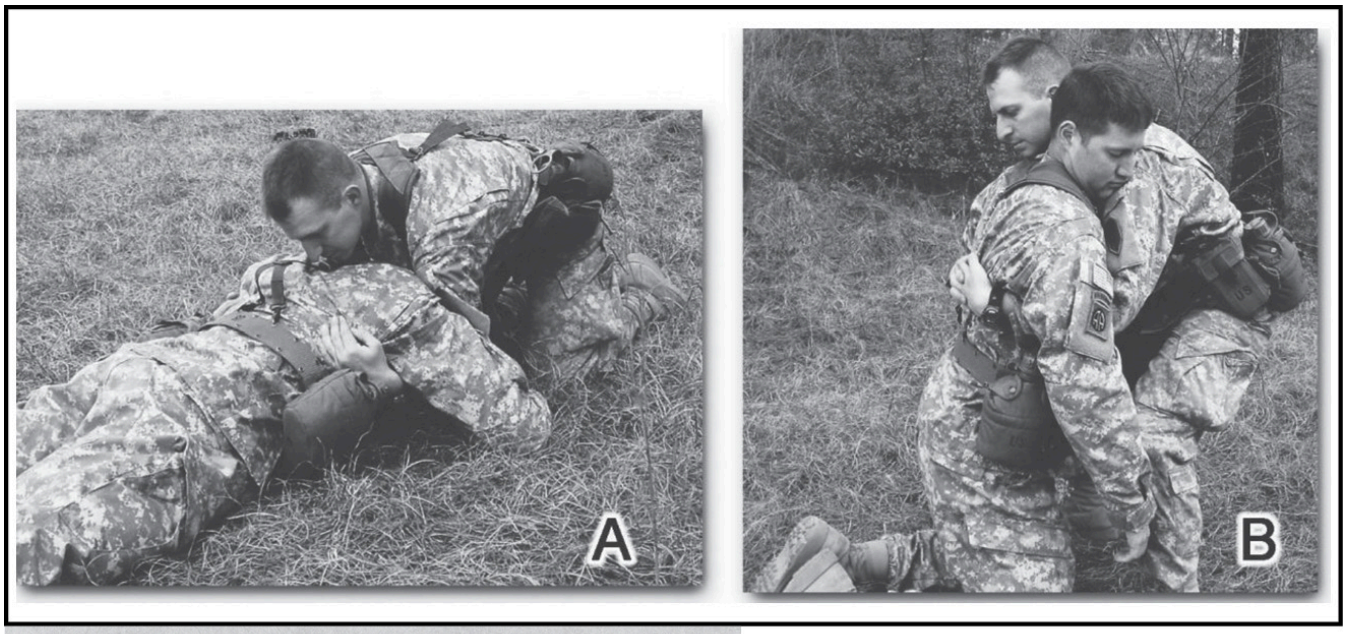


Figure 3-41. Alternate fireman's carry.

Supporting Carry

With this method (Figure 3-42), the casualty must be able to walk or at least hop on one leg, with you as a crutch. You can use this carry to help him go as far as he can walk or hop. Raise him from the ground to a standing position using the fireman's carry. Grasp his wrist, and draw his arm around your neck. Place your arm around his waist. This should enable the casualty to walk or hop, with you as a support.

Figure 3-42. Supporting carry.

WARNING

★ Avoid using this carry if the casualty has a broken arm.

Neck Drag

This method (Figure 3-43) is useful in combat, because you can carry the casualty as he creeps behind a low wall or shrubbery, under a vehicle, or through a culvert. If the casualty is conscious, let him clasp his hands together around your neck. To do this, first tie his hands together at the wrists, and then straddle him. You should be kneeling, facing the casualty. Second, loop his tied hands over and around your neck. Third, crawl forward and drag the casualty with you. If he is unconscious, protect his head from the ground.

Figure 3-43. Neck drag.

Cradle-Drop Drag

Use this method to move a casualty up or down steps. Kneel at the casualty's head (with him on his back). Slide your hands, with palms up, under the casualty's shoulders. Get a firm hold under his armpits (A, Figure 3-44). Rise partially while supporting the casualty's head on one of your forearms (B, Figure 3-44). You may bring your elbows together and let the casualty's head rest on both of your forearms. Rise and drag the casualty backward so he is in a semi-seated position (C, Figure 3-44).

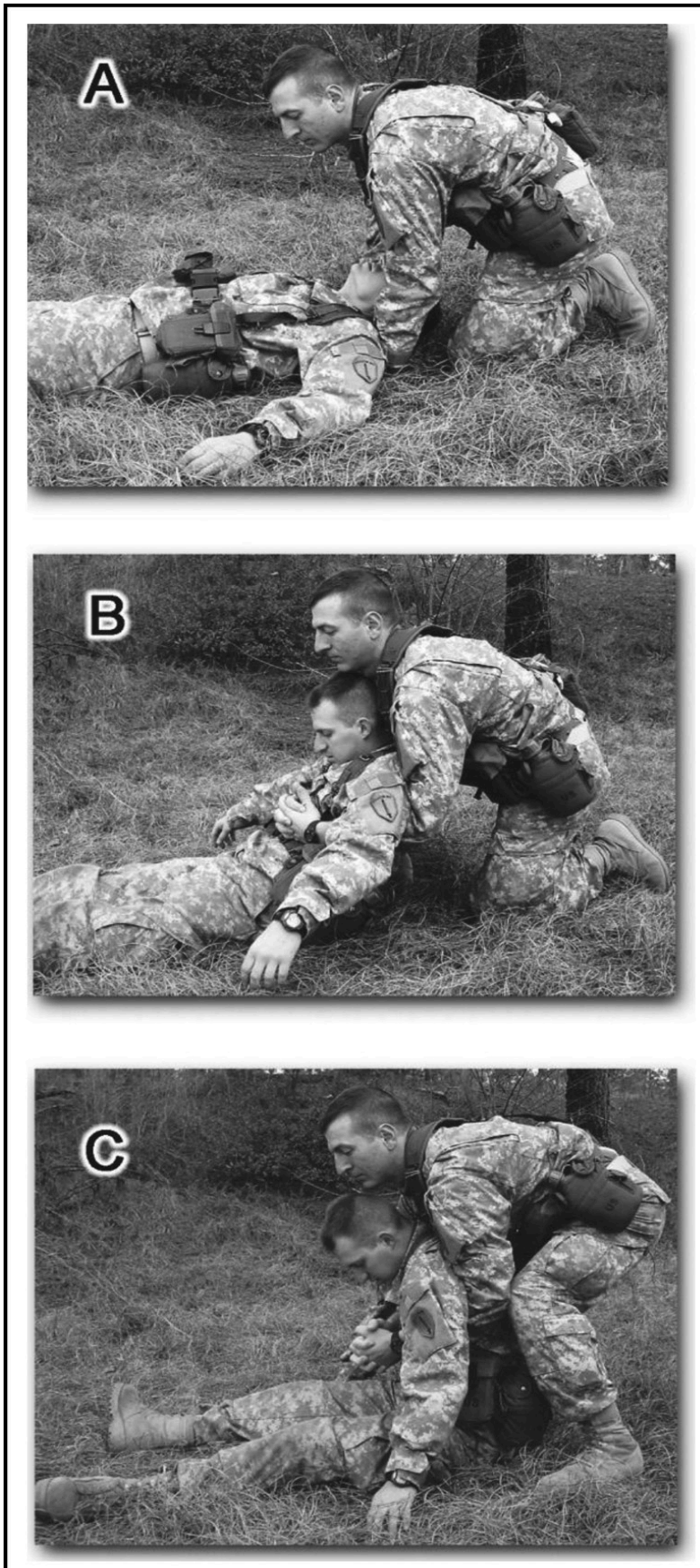


Figure 3-44. Cradle-drop drag.

TWO-MAN CARRIES

Use these when you can. They are more comfortable for the casualty, less likely to aggravate his injuries, and less tiring for you.

Two-Man Support Carry

Use this method to transport either conscious or unconscious casualties. If the casualty is taller than you (the bearers), you might have to lift his legs and let them rest on your forearms. Help him to his feet and support him with your arms around his waist. Then, grasp the casualty's wrists and draw his arms around your necks (Figure 3-45).

Figure 3-45. Two-man support carry.

Two-Man Fore-and-Aft Carry

You can use this to transport a casualty for a long distance, say, more than three hundred meters. The taller of you (the two bearers) should position yourself at the casualty's head.

The shorter of you spreads the casualty's legs and kneels between them, with your back to the casualty. Position your hands behind the casualty's knees. The taller of you kneels at the casualty's head, slides your hands under his arms and across his chest, and locks your hands together (A, Figure 3-46). Both of you should rise together, lifting the casualty (B, Figure 3-46). If you alter this carry so that both of you are facing the casualty, you can use it to place him on a litter.

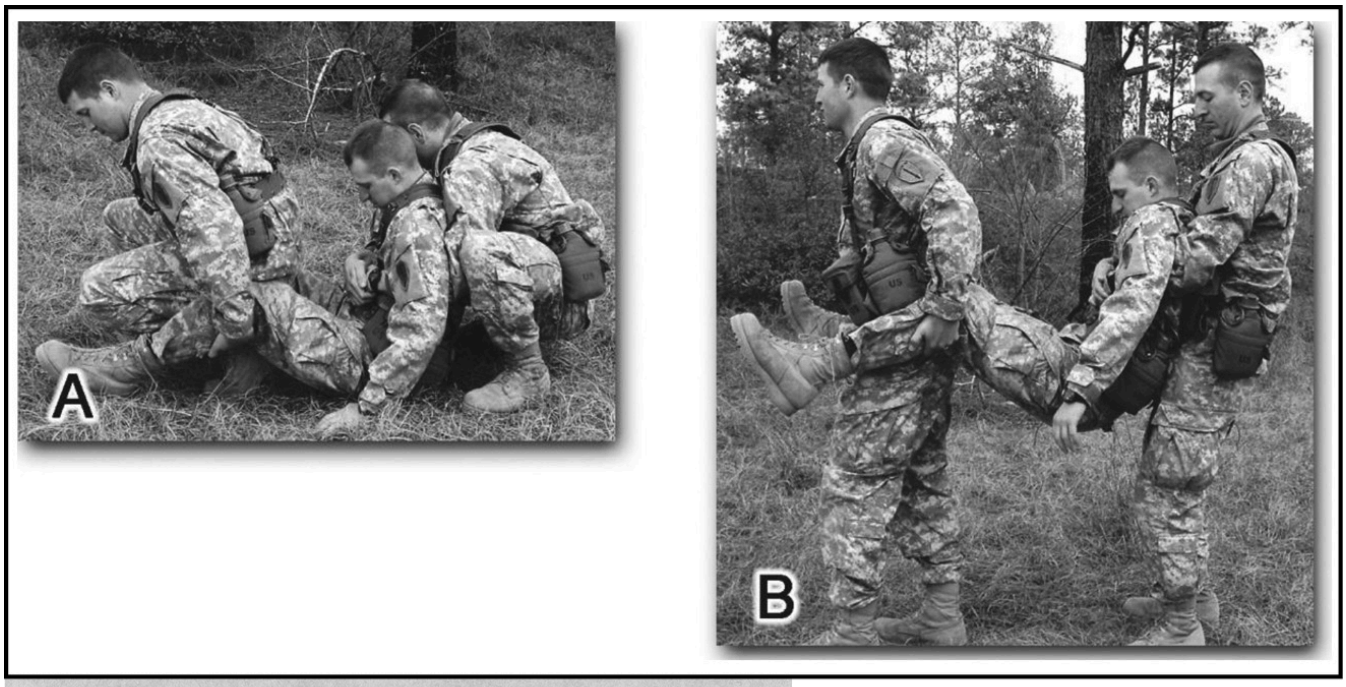


Figure 3-46. Two-man fore-and-aft carry.

Two-Hand Seat Carry

You can use this method to carry a casualty for a short distance or to place him on a litter. With the casualty lying on his back, one of you should kneel on one side of the casualty at his hips, and the other should kneel on the other side. Each of you should pass your arms under the casualty's thighs and back, and grasp the other bearer's wrists. Both of you then rise, lifting the casualty (Figure 3-47).

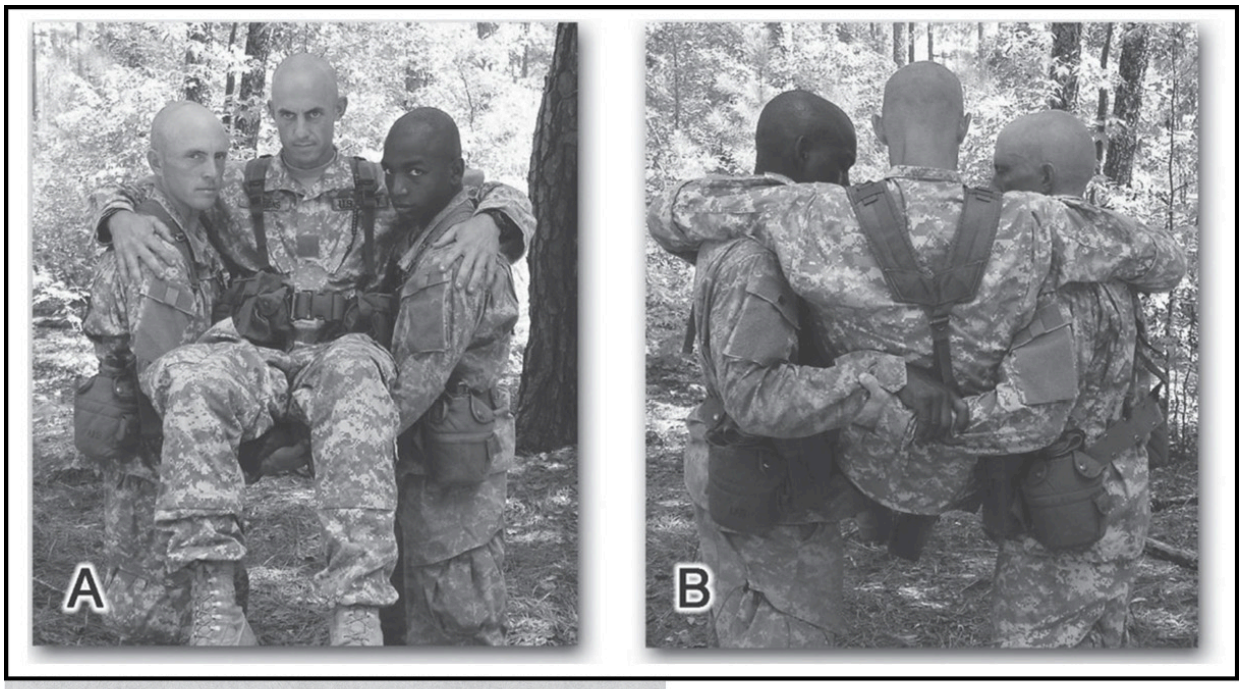


Figure 3-47. Two-hand seat carry.

IMPROVISED LITTERS

Two men can support or carry a casualty without equipment for only short distances. By using available materials to improvise equipment, two or more rescuers can transport the casualty over greater distances.

1. Sometimes a casualty must be moved without a standard litter. The distance might be too great for a manual carry, or the casualty might have an injury, such as a fractured neck, back, hip, or thigh, that manual transportation would aggravate. If this happens, improvise a litter from materials at hand. Construct it well to avoid dropping or further injuring the casualty. An improvised litter is an emergency measure only. Replace it with a standard litter as soon as you can.
2. You can improvise many types of litters, depending on the materials available. You can make a satisfactory litter by securing poles inside such items as ponchos, tarps, jackets, or shirts. You can improvise poles from strong branches, tent supports, skis, lengths of pipe, or other objects. If nothing is available to use as a pole, then roll a poncho or similar item from both sides toward the center, so you can grip the roll(s) and carry the casualty. You can use most any flat-surfaced object as long as it is the right size, for example, doors, boards, window shutters, benches, ladders, cots, or chairs. Try to find something to pad the litter for the casualty's comfort. You can use either the two-man fore-and-aft carry (Figure 3-46) or the two-hand seat carry (Figure 3-47) to place the casualty on a litter.
3. Use either two or four service members (head/foot) to lift a litter. Everybody should raise the litter at the same time to keep the casualty as level as possible.

DANGER

★ Unless there is an immediate life-threatening situation (such as fire or explosion), NEVER move a casualty who has a suspected back or neck injury. Instead, seek medical personnel for guidance on how to transport him.

WARNING

★ Use caution when transporting on a sloping incline/hill.

SECTION II. PREVENTIVE MEDICINE

Personal hygiene and cleanliness practices (Figure 3-48) safeguard your health and that of others. Specifically, they—

- Never consume foods and beverages from unauthorized sources.
- Never soil the ground with urine or feces. Use a latrine or "cathole."
- Keep your fingers and contaminated objects out of your mouth.
- Wash your hands--
  -- After any contamination.
  -- Before eating or preparing food.
  -- Before cleaning your mouth and teeth.
- Wash all mess gear after each meal or use disposable plastic ware once.
- Clean your mouth and teeth at least once each day.
- Avoid insect bites by wearing proper clothing and using insect repellents.
- Avoid getting wet or chilled unnecessarily.
- Avoid sharing personal items with other Soldiers, for example--
  -- Canteens.
  -- Pipes.
  -- Toothbrushes.
  -- Washcloths.
  -- Towels.
  -- Shaving gear.
- Avoid leaving food scraps lying around.
- Sleep when possible.
- Exercise regularly.

Figure 3-48. Rules for avoiding illness in the field.

- Protect against disease-causing germs that are present in all environments.
- Keep disease-causing germs from spreading.
- Promote health among soldiers.
- Improve morale.

CLOTHING AND SLEEPING GEAR

Situation permitting, wash or exchange your clothing when it gets dirty. Do the same with your sleeping gear. When you cannot do this, at least shake everything out and air it regularly in the sun. This will reduce the number of germs on them.

CARE OF THE FEET

Wash and dry your feet at least daily. Use foot powder on your feet to help kill germs, reduce friction on the skin, and absorb perspiration. Change your socks daily. As soon as you can

after you cross a wet area, dry your feet, put on foot powder, and change socks (Figure 3-49).

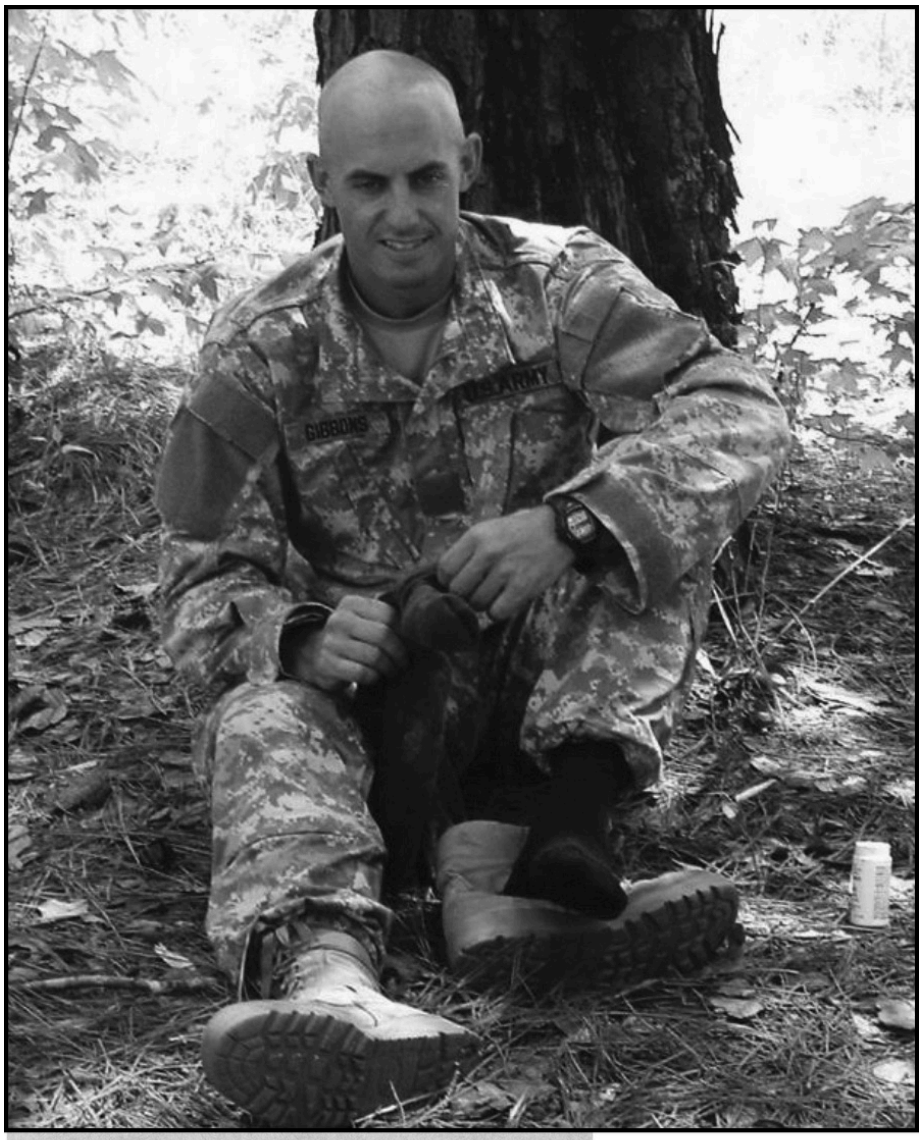


Figure 3-49. Care of the feet.

FOOD AND DRINK

For proper development, strength, and survival, your body requires proteins, fats, and carbohydrates. It also requires minerals, vitamins, and water. Issued rations have those essential food substances in the right amounts and proper balance. So, primarily eat those rations. When feasible, heat your meals. This will make them taste better and will reduce the energy required to digest them. Avoid overindulging in sweets, soft drinks, alcoholic beverages, and other non-issued rations. They have little nutritional value and are often harmful. Eat food only from approved sources. Drink water only from approved sources, or treat it with water purification tablets. To do this—

1. Fill your canteen with water, keeping trash and other objects out.
2. Add one purification tablet to a quart of clear water or
3. add two tablets to a quart of cloudy or very cold water.
4. In the absence of purification tablets, boil water for five minutes.
5. Replace the cap loosely.
6. Wait five minutes.
7. Shake the canteen well, and let some of the water leak out.
8. Tighten the cap.
9. Wait twenty more minutes before drinking the water.

MENTAL HEALTH AND MORALE

To maintain mental health and self-confidence—

MENTAL HYGIENE

The way you think affects the way you act. If you know your job, you will probably act quickly and effectively. If you are uncertain or doubtful of your ability to do your job, you may hesitate and make wrong decisions. Positive thinking is a necessity. You must enter combat with absolute confidence in your ability to do your job. Keep in mind that—

- Fear is a basic human emotion. It is mental and physical. In itself, fear is not shameful, if controlled. It can even help you, by making you more alert and more able to do your job. For example, a fear-induced adrenaline rush might help you respond and defend yourself or your comrades quickly during an unpredicted event or combat situation. Therefore, fear can help you—use it to your advantage.
- Avoid letting your imagination and fear run wild. Remember, you are not alone. You are part of a team. Other soldiers are nearby, even though you cannot always see them. Everyone must help each other and depend on each other.
- Worry undermines the body, dulls the mind, and slows thinking and learning. It adds to confusion, magnifies troubles, and causes you to imagine things that really do not exist. If you are worried about something, talk to your leader about it. He might be able to help solve the problem.
- You might have to fight in any part of the world and in all types of terrain. Therefore, adjust your mind to accept conditions as they are. If mentally prepared for it, you should be able to fight under almost any conditions.

EXERCISE

Exercise your muscles and joints to maintain your physical fitness and good health. Without exercise, you might lack the physical stamina and ability to fight. Physical fitness includes a healthy body, the capacity for skillful and sustained performance, the ability to recover from exertion rapidly, the desire to complete a designated task, and the confidence to face any possible event. Your own safety, health, and life may depend on your physical fitness. During lulls in combat, counteract inactivity by exercising. This helps keep your muscles and body functions ready for the next period of combat. It also helps pass the time.

REST

Your body needs regular periods of rest to restore physical and mental vigor. When you are tired, your body functions are sluggish, and your ability to react is slower than normal, which makes you more susceptible to sickness, and to making errors that could endanger you or others. For the best health, you should get six to eight hours of uninterrupted sleep each day. As that is seldom possible in combat, use rest periods and off-duty time to rest or sleep. Never be ashamed to say that you are tired or sleepy. However, never sleep on duty.

CHAPTER 4
ENVIRONMENTAL CONDITIONS

In today's army, soldiers may deploy and fight anywhere in the world. They may go into the tropical heat of Central America, the deserts of the Middle East, and the frozen tundra of Alaska. Each environment presents unique situations concerning a soldier's performance. Furthermore, physical exertion in extreme environments can be life threatening. While recognizing such problems are important, preventing them is even more important; and furthermore, requires an understanding of the environmental factors that affect performance and how the body responds to those factors.

SECTION I. DESERT

Desert terrain, demanding and difficult to traverse, often provides very few landmarks. Furthermore, with cover and concealment highly limited, the threat of exposure to the enemy is constant. Most arid areas have several types of terrain.

TYPES

The five basic desert types are—

- Mountainous (high altitude).
- Rocky plateaus.
- Sand dunes.
- Salt marshes.
- Broken, dissected terrain (gebels or wadis).

MOUNTAINOUS DESERTS

Scattered ranges or areas of barren hills or mountains separated by dry, flat basins characterize mountainous deserts. High ground may rise gradually or abruptly from flat areas to several thousand meters above sea level. Most of the infrequent rainfall occurs on high ground and runs off rapidly in the form of flash floods. These floodwaters erode deep gullies and ravines and deposit sand and gravel around the edges of the basins. Water rapidly evaporates, leaving the land as barren as before, although there may be short-lived vegetation. If enough water enters the basin to compensate for the rate of evaporation, shallow lakes may develop, such as the Great Salt Lake in Utah or the Dead Sea. Most of these lakes have a high salt content.

ROCKY PLATEAU DESERTS

Rocky plateau deserts have relatively slight relief interspersed with extensive flat areas with quantities of solid or broken rock at or near the surface. There may be steep-walled, eroded

valleys, known as wadis in the Middle East and arroyos or canyons in the United States and Mexico. Although their flat bottoms may be superficially attractive as assembly areas, the narrower valleys can be extremely dangerous to men and material due to flash flooding after rains. The Golan Heights is an example of a rocky plateau desert.

SAND DUNE DESERTS

Sand dune deserts are extensive flat areas covered with sand or gravel. "Flat" is a relative term, as some areas may contain sand dunes that are more than 1,000 feet (300 meters) high and 10 to 15 miles (16 to 24 kilometers) long. Traffic ability in such terrain will depend on the windward or leeward slope of the dunes and the texture of the sand. However, other areas may be flat for 10,000 feet (3,000 meters) and more. Plant life may vary from none to scrub more than 7 feet (2 meters) high. Examples of this type of desert include the edges of the Sahara, the empty quarter of the Arabian Desert, areas of California and New Mexico, and the Kalahari in South Africa.

SALT MARSHES

Salt marshes are flat, desolate areas sometimes studded with clumps of grass, but devoid of other vegetation. They occur in arid areas where rainwater has collected, evaporated, and left large deposits of alkali salts and water with a high salt concentration. The water is so salty it is undrinkable. A crust that may be 1 to 12 inches (2.5 to 30 centimeters) thick forms over the saltwater. Arid areas may contain salt marshes as much as hundreds of kilometers square. These areas usually support many insects, most of which bite. Avoid salt marshes, as this type of terrain is highly corrosive to boots, clothing, and skin. A good example of a salt marsh is the Shatt al Arab waterway along the Iran-Iraq border.

BROKEN AND DISSECTED TERRAIN

All arid areas contain broken or highly dissected terrain. Rainstorms that erode soft sand and carve out canyons form this terrain. A wadi may range from 10 feet (3 meters) wide and 7 feet (2 meters) deep to several hundred meters wide and deep. The direction a wadi takes varies as much as its width and depth. It twists and turns in a maze-like pattern. A wadi will give you good cover and concealment, but be cautious when deciding to try to move through it, because it is very difficult terrain to negotiate.

PREPARATION

Surviving in an arid area depends on what you know and how prepared you are for the environmental conditions.

FACTORS

In a desert area, you must consider—

- Low rainfall.
- Intense sunlight and heat.
- Wide temperature range.
- Sparse vegetation.
- High mineral content near ground surface.
- Sandstorms.
- Mirages.

Low Rainfall
Low rainfall is the most obvious environmental factor in an arid area. Some desert areas receive less than four inches (ten centimeters) of rain annually. When they do, it comes as brief torrents that quickly run off the ground surface.

Intense Sunlight and Heat
Intense sunlight and heat are present in all arid areas. Air temperature can rise as high as 140º F (60º C) during the day. Heat gain results from direct sunlight, hot blowing sand-laden winds, reflective heat (the sun's rays bouncing off the sand), and conductive heat from direct contact with the desert sand and rock. The temperature of desert sand and rock typically ranges from 30 to 40º F (16 to 22º C) more than that of the air. For example, when the air temperature is 110º F (43º C), the sand temperature may be 140º F (60º C). Intense sunlight and heat increase the body's need for water. Radios and sensitive equipment items exposed to direct intense sunlight can malfunction.

Wide Temperature Range
Temperatures in arid areas may get as high as 130º F (55º C) during the day, and as low as 50º F (10º C) at night. The drop in temperature at night occurs rapidly and will chill a person who lacks warm clothing and is unable to move about. The cool evenings and nights are the best times to work or travel.

Sparse Vegetation
Vegetation is sparse in arid areas; therefore, you will have trouble finding shelter and camouflaging your movements. During daylight hours, large areas of terrain are easily visible. If traveling in hostile territory, follow the principles of desert camouflage:

- Hide or seek shelter in dry washes (wadis) with thick vegetation and cover from oblique observation.
- Use the shadows cast from brush, rocks, or outcroppings. The temperature in shaded areas will be 52 to 63º F (11 to 17º C) cooler than the air temperature.
- Cover objects that will reflect the light from the sun.

Before moving, survey the area for sites that provide cover and concealment. Keep in mind that it will be difficult to estimate distance. The emptiness of desert terrain causes most people to underestimate distance by a factor of three: what appears to be ½ mile (1 kilometer) away is really 1.75 miles (3 kilometers) away.

Sandstorms
Sandstorms (sand-laden winds) occur frequently in most deserts. The Seistan desert wind in Iran and Afghanistan blows constantly for up to 120 days. In Saudi Arabia, winds can reach 77 mph (128 kph) in early afternoon. Major sandstorms and dust storms occur at least once a week. The greatest danger is getting lost in a swirling wall of sand. Wear goggles and cover your mouth and nose with cloth. If natural shelter is unavailable, mark your direction of travel, lie down, and wait out the storm. Dust and windblown sand interfere with radio transmissions. Therefore, plan to use other means of signaling such as pyrotechnics, signal mirrors, or marker panels, whichever you have.

Mirages

Mirages are optical phenomena caused by the refraction of light through heated air rising from a sandy or stony surface. Mirages occur in the desert's interior about 6 miles (10 kilometers) from the coast. They make objects that are 1 mile (1.5 kilometers) or more away appear to move. This mirage effect makes it difficult for you to identify an object from a distance. It also blurs distant range contours so much that you feel surrounded by a sheet of water from which elevations stand out as "islands." The mirage effect makes it hard for a person to identify targets, estimate range, and see objects clearly. However, if you can get to high ground 10 feet [3 meters] or more above the desert floor, you can get above the superheated air close to the ground and overcome the mirage effect. Mirages make land navigation difficult because they obscure natural features. You can survey the area at dawn, at dusk, or by moonlight when there is little likelihood of mirage. Light levels in desert areas are more intense than in other geographic areas.

Moonlit nights are usually clear, with excellent visibility, because daytime winds die down and haze and glare disappear. You can see lights, red flashlights, and blackout lights at great distances. Sound carries very far as well. Conversely, during nights with little moonlight, visibility is extremely poor. Traveling is extremely hazardous. You must avoid getting lost, falling into ravines, or stumbling into enemy positions. Movement during such a night is practical only if you have a means to determine direction and have spent the day resting; observing and memorizing the terrain; and selecting your route.

NEED FOR WATER

Since the early days of World War II, when the U.S. Army was preparing to fight in North Africa, the subject of soldier and water in the desert has generated considerable interest and confusion. At one time, the U.S. Army thought it could condition men to do with less water by progressively reducing their water supplies during training. This practice of water discipline has caused hundreds of heat casualties. A key factor in desert survival is understanding the relationship between physical activity, air temperature, and water consumption. The body requires a certain amount of water for a certain level of activity at a certain temperature. For example, a person performing hard work in the sun at 109º F (43º C) requires 19 liters (5 gallons) of water daily. Lack of the required amount of water causes a rapid decline in an individual's ability to make decisions and to perform tasks efficiently. Your body's normal temperature is 98.6º F (36.9º C). Your body gets rid of excess heat (cools off) by sweating. The warmer your body becomes—whether caused by work, exercise, or air temperature—the more you sweat. The more you sweat the more moisture you lose. Sweating is the principal cause of water loss. If you stop sweating during periods of high-air temperature, heavy work, or exercise, you will quickly develop heat stroke and require immediate medical attention. Understanding how the air temperature and your physical activity affect your water requirements allows you to take measures to get the most from your water supply. These measures are—

- Find shade and get out of the sun!
- Place something between you and the hot ground.
- Limit your movements!
- Conserve your sweat. Wear your complete uniform, including T-shirt. Roll the sleeves down, cover your head, and protect your neck with a scarf or similar item. These steps will protect your body from hot-blowing winds and the direct rays of the sun. Your clothing will absorb your sweat, keeping it against your skin so that you gain its full cooling effect.

Thirst is not a reliable guide for your need for water. A person who uses thirst as a guide will drink only two thirds of his daily water requirement. Drinking water at regular intervals helps your body remain cool and decreases sweating. Even when your water supply is low, sipping water constantly will keep your body cooler and reduce water loss through sweating. Conserve your fluids by reducing activity during the heat of the day if possible. To prevent this voluntary dehydration, use the following guide:

- Below 100º F (38º C), drink 0.5 liter of water every hour.
- Above 100º F (38º C), drink 1 liter of water every hour.

HAZARDS

Several hazards are unique to the desert environment. These include insects, snakes, thorny plants and cacti, contaminated water, sunburn, eye irritation, and climatic stress. Insects of almost every type abound in the desert. Man, as a source of water and food, attracts lice, mites, wasps, and flies. Insects are extremely unpleasant and may carry diseases. Old buildings, ruins, and caves are favorite habitats of spiders, scorpions, centipedes, lice, and mites. These areas provide protection from the elements and attract other wildlife. Therefore, take extra care when staying in these areas. Wear gloves at all times in the desert. Do not place your hands anywhere without first looking to see what is there. Visually inspect an area before sitting or lying down. When you get up, shake out and inspect your boots and clothing. All desert areas have snakes. They inhabit ruins, native villages, garbage dumps, caves, and natural rock outcroppings that offer shade. Never go barefoot or walk through these areas without carefully inspecting them for snakes. Pay attention to where you place your feet and hands. Most snakebites result from stepping on or handling snakes. Avoid them. Once you see a snake, give it a wide berth.

SECTION II. JUNGLE

The jungle comprises a substantial portion of the earth's landmass. Jungle environments consist of tall grasslands; mountains; swamps; blue and brown water; and single-/double-canopy vegetation. Jungle environments are prominent in South America, Asia, and Africa. High temperatures, heavy rainfall, and oppressive humidity characterize equatorial and subtropical regions, except at high altitudes. At low altitudes, temperature variation is seldom less than 50º F (10º C) and is often more than 95º F (35º C). At altitudes above 4,921 feet (1,500 meters), ice often forms at night. The rain has a cooling effect, but stops when the temperature soars. Rainfall is heavy, often with thunder and lightning. Sudden rain beats on the tree canopy, turning trickles into raging torrents and causing rivers to rise. Just as suddenly, the rain stops. Violent storms may occur, usually toward the end of the summer months. The dry season has rain once a day and the monsoon has continuous rain. In Southeast Asia, winds from the Indian Ocean bring the monsoon but the area is dry when the wind blows from the landmass of China. Tropical day and night are of equal length. Darkness falls quickly and daybreak is just as sudden. Leaders must consider several jungle subtypes and other factors when performing duty and surviving in the jungle:

TYPES

There is no standard type of jungle. Jungle can consist of any combination of the following terrain subtypes:

- Rain forests.
- Secondary jungles.
- Semi-evergreen seasonal and monsoon forests.
- Scrub and thorn forests.
- Savannas.
- Saltwater swamps.
- Freshwater swamps.

TROPICAL RAIN FORESTS

The climate varies little in rain forests. You find these forests across the equator in the Amazon and Congo basins, parts of Indonesia, and several Pacific islands. Up to 144 inches (365.8 centimeters) of rain falls throughout the year. Temperatures range from about 90º F (32º C) in the day to 70º F (21º C) at night. There are five layers of vegetation in this jungle. Sometimes still untouched by humans, jungle trees rise from buttress roots to heights of 198 feet (60 meters). Below them, smaller trees produce a canopy so thick that little light reaches the jungle floor. Seedlings struggle to reach light, and masses of vines twine their way to the sun. Ferns, mosses, and herbaceous plants push through a thick carpet of leaves, and fungi adorn leaves and fallen trees. The darkness of the jungle floor limits growth, which aids in movement. Little undergrowth is present to hamper movement, but dense growth limits visibility to about 55 yards (50 meters). You can easily lose your sense of direction in a tropical rain forest, and aircraft have a hard time seeing you.

SECONDARY JUNGLES

Secondary jungle is very similar to rain forest. Prolific growth, where sunlight penetrates to the jungle floor, typifies this type of forest. Such growth happens mainly along riverbanks, on jungle fringes, and where soldiers have cleared rain-forested areas. When abandoned, tangled masses of vegetation quickly reclaim these cultivated areas. You can often find cultivated food plants among secondary jungles.

SEMI-EVERGREEN SEASONAL AND MONSOON FORESTS

The characteristics of the American and African semi-evergreen seasonal forests correspond with those of the Asian monsoon forests:

- Their trees fall into two stories of tree strata.
    - Upper story 60 to 79 feet (18 to 24 meters)
    - Lower story 23 to 43 feet (7 to 13 meters)
- The diameter of the trees averages 2 feet (0.5 meter).
- Their leaves fall during a seasonal drought.

Except for the sago, nipa, and coconut palms, the same edible plants grow in these areas as in the tropical rain forests. You find these forests in portions of Columbia and Venezuela and the Amazon basin in South America; in southeast coastal Kenya, Tanzania, and Mozambique in Africa; in northeastern India, much of Burma, Thailand, Indochina, Java, and parts of other Indonesian islands in Asia.

TROPICAL SCRUB AND THORN FORESTS

Tropical scrub and thorn forests exist on the west coast of Mexico, on the Yucatan peninsula, in Venezuela, and in Brazil; on the northwest coast and central parts of Africa; and (in Asia) in Turkistan and India. Food plants are scarce during the dry season and more abundant during the rainy season. The chief characteristics of tropical scrub and thorn forests include—

- They have a definite dry season.
- Trees are leafless during the dry season.
- Ground is bare, except for a few tufted plants in bunches.
- Grasses are uncommon.
- Plants with thorns predominate.
- Fires occur frequently.

TROPICAL SAVANNAS

South American savannas occur in parts of Venezuela, Brazil, and Guiana. In Africa, they occur in the southern Sahara (north-central Cameroon and Gabon and southern Sudan); Benin; Togo; most of Nigeria; the Northeastern Republic of Congo; Northern Uganda; Western Kenya; and parts of Malawi and Tanzania, Southern Zimbabwe, Mozambique, and Western Madagascar. A savanna generally—

- Exists in the tropical zones of South America and Africa.
- Looks like a broad, grassy meadow, with trees spaced at wide intervals.
- Has lots of red soil.
- Grows scattered, stunted, and gnarled trees (like apple trees) as well as palm trees.

SALTWATER SWAMPS

Saltwater swamps are common in coastal areas subject to tidal flooding. Mangrove trees thrive in these swamps and can grow to 39 feet (12 meters). In saltwater swamps, visibility is poor and movement is extremely difficult. Sometimes, raftable streams form channels, but foot travel is usually required. Saltwater swamps exist in West Africa, Madagascar, Malaysia, the Pacific islands, Central and South America, and at the mouth of the Ganges River in India. Swamps at the mouths of the Orinoco and Amazon Rivers, and of the rivers of Guyana, offer plenty of mud and trees, but little shade. Tides in saltwater swamps can vary as much as 3 feet (0.9 meter). Advice for this terrain is, try to avoid the leeches, the various insects, including no-see-ums, and crocodiles and caimans. If you can, avoid saltwater swamps. However, if they have suitable water channels, you might be able to traverse them by raft, canoe, or rubber boat.

FRESHWATER SWAMPS

Freshwater swamps exist in some low-lying inland areas. They have masses of thorny undergrowth, reeds, grasses, and occasional short palms. These all reduce visibility and make travel difficult. Freshwater swamps are dotted with large and small islands, allowing you to get out of the water. Wildlife is abundant in freshwater swamps.

PREPARATION

Success in the jungle depends on your level of applicable knowledge and preparation.

TRAVEL THROUGH JUNGLE AREAS

With practice, you can move through thick undergrowth and jungle efficiently. Always wear long sleeves to avoid cuts and scratches.

"Jungle Eye"

To move easily, you must develop a "jungle eye." That is, look through the natural breaks in foliage rather than at the foliage itself. Stoop down occasionally to look along the jungle floor.

Game Trails

You may find game trails you can follow. Stay alert and move slowly and steadily through dense forest or jungle. Stop periodically to listen and reorient on your objective. Many jungle and forest animals follow game trails. These trails wind and cross, but frequently lead to water or clearings. Use these trails if they lead in your desired direction of travel. However, they may also be favorite enemy points for ambushes and booby traps.

Machete

Use a machete to cut through dense vegetation, but avoid cutting too much, or you will tire quickly. If using a machete, stroke upward when cutting vines to reduce noise, because sound carries long distances in the jungle.

Stick

Use a stick to part the vegetation and to help dislodge biting ants, spiders, or snakes. Never grasp brush or vines when climbing slopes, because they may have irritating spines, sharp thorns, biting insects, and snakes.

Power and Telephone Lines

In many countries, electric and telephone lines run for miles through sparsely inhabited areas. Usually, the right-of-way is clear enough to allow easy travel. When traveling along these lines, be careful as you approach a transformer and relay stations, because they may be guarded.

WATER PROCUREMENT

Although water is abundant in most tropical environments, you may have trouble finding it, and when you do, it may not be safe to drink. Vines, roots, palm trees, and condensation are just a few of the many sources of water. You can sometimes follow animals to water. Often you can get nearly clear water from muddy streams or lakes by digging a hole in sandy soil about three feet (one meter) from the bank. Water will then seep into the hole. Remember, you must purify any water you get this way.

POISONOUS PLANTS

The proportion of poisonous plants in tropical regions is no greater than in any other area of the world. However, it may appear that most plants in the tropics are poisonous, due to preconceived notions and the density of plant growth in some tropical areas.

SECTION III. ARCTIC

Cold regions include arctic and subarctic areas, and areas immediately adjoining them. About 48 percent of the Northern Hemisphere's total landmass is a cold region, due to the influence and range of air temperatures. Ocean currents affect cold weather and cause large areas

normally included in the temperate zone to fall within the cold regions during winter periods. Elevation also has a marked effect on defining cold regions. Within the cold weather regions, you may face two types of cold weather environments—wet or dry. Knowing which environment your area of operation (AO) falls in will affect planning and execution of a cold weather operation.

TYPES

The two types of arctic climates are wet-cold and dry-cold.

WET-COLD WEATHER ENVIRONMENTS

Wet-cold weather conditions exist when the average temperature in a 24-hour period is 14º F (-10º C) or above. Characteristics of this condition include freezing temperatures at night and slightly warmer temperatures during the day. Although temperatures in a wet-cold environment are warmer than those in a dry-cold environment, the terrain is usually very sloppy due to slush and mud. Protect yourself from the wet ground, freezing rain, and wet snow.

DRY-COLD WEATHER ENVIRONMENTS

Dry-cold weather conditions exist when the average temperature in a 24-hour period remains below 14º F (-10º C). Even though these temperatures are much lower than normal, you can avoid freezing and thawing. In temperatures down to -76º F (-60º C), wear extra layers of inner clothing. Wind and low temperatures are an extremely hazardous combination.

PREPARATION

Success in the arctic begins with preparedness:

WIND CHILL

Wind chill increases the hazards in cold regions. It is the effect of moving air on exposed flesh. For example, with a 15 knot (27.8 kmph) wind and a temperature of -14º F (-10º C), the equivalent wind chill temperature is -9º F (-23 degrees C). Remember, even when no wind is blowing, your own movement creates “apparent” wind. Such movements as skiing, running, being towed on skis behind a vehicle, or working around aircraft that produce windblasts will create the equivalent wind.

TRAVEL

Soldiers will find it almost impossible to travel in deep snow without snowshoes or skis. Traveling by foot leaves a well-marked trail for pursuers to follow. If you must travel in deep snow, avoid snow-covered streams. The snow, which acts as an insulator, may have prevented ice from forming over the water. In hilly terrain, avoid areas where avalanches appear possible. On ridges, snow gathers on the lee side in overhanging piles called cornices. These often extend far out from the ridge and may break loose if stepped on.

WATER

Many sources of water exist in the arctic and subarctic. Your location and the season of the year will determine where and how you obtain water. Water sources in arctic and subarctic regions are more sanitary than in other regions due to the climatic and environmental conditions. However, always purify water before drinking it. During the summer months, the

best natural sources of water are freshwater lakes, streams, ponds, rivers, and springs. Water from ponds or lakes may be slightly stagnant but still usable. Running water in streams, rivers, and bubbling springs is usually fresh and suitable for drinking.

PART TWO

SOLDIER COMBAT SKILLS

CHAPTER 5
COMBATIVES

Combatives training stands apart from the vast majority of other training in that it is both physically and mentally intimidating. This is the reason why it is both so often resisted by commanders who lack faith in their own abilities and why it is the very best tool we have to inculcate an actual Warrior Ethos. Combatives is the link between physical training and tactical training and this must be integrated into both. This is the only way in which every soldier can be made to take on the Warrior Ethos and the proverbial "I would just shoot you" excuse of the coward can be weeded out of the organization.

Combatives, the art of hand-to-hand combat, bridges the gap between physical training and tactics. The products of a good physical training plan—strength, endurance, and flexibility—must be directed toward the mission, and soldiers must be prepared to use different levels of force in an environment where the intensity of a conflict changes quickly. Many military operations, such as peacekeeping missions or noncombatant evacuation, may restrict the use of lethal force. Combatives training prepares the soldier to use the appropriate amount of force for any situation.

Combatives training includes arduous physical training that is mentally demanding and carries over to other military pursuits. This training produces soldiers who—

- Understand controlled aggression and remain focused while under duress.
- Possess the skills requisite to the mission, at all levels in the spectrum of force.
- Have the attributes that make up the Warrior Ethos—personal courage, self-confidence, self-discipline, and esprit de corps.

SECTION I. SYSTEM PRINCIPLES

Throughout modern history, attempts to build a successful combatives system have failed or have been met with limited success. This has happened for several reasons. Quite naturally, commanders desire a system that doesn't require any training time to learn and maintain. Further, training has often been conducted by experts in civilian martial arts. These experts use training methodologies that are designed more for the civilian hobbyist than the realities of war.

Often, combatives training has been approached by allowing a soldier versed in a civilian martial art to use a limited amount of training time, usually during another course (such as initial entry training [IET] or specialist training), to teach a useful technique. Blinded by their civilian training, the trainer demonstrates what the trainer thinks are simple, effective, and easy-to-learn techniques selected based on a situation soldiers may find themselves in or the tactical niche of the specialist training. The trainer teaches the soldiers these techniques, but due to the limited amount of training time, the soldiers quickly forget them. To overcome

these tendencies, a combatives training system must be based on certain principles, and then maintained. These principles are—

- Systematic training.
- Foundation.
- Continuous training.
- Competition.
- Drills.
- Live training.
- Integrated training.
- Combat feedback.

SYSTEMATIC TRAINING

Learning to fight is a process, not an event. To be effective, combatives training must be part of a system. Until soldiers learn the techniques that form the system's foundation, they are unprepared for follow-on training; shortcuts or teaching soldiers "what they need to know" is counterproductive, much as advanced tactical training is counterproductive if a soldier has not first been taught how to operate his weapon. Army combatives training must be based in a system that both lays a foundation of abilities that soldiers take with them wherever they are assigned and is flexible enough to fit the wide range of specialized missions soldiers and units are asked to perform.

FOUNDATION

Army institutional training should build a foundation for combatives training. Training should concentrate on the fundamentals of the combatives system—from learning basic combatives techniques in individual entry training (IET) and advanced individual training (AIT) to leading a successful unit program in the leadership courses of the Noncommissioned Officer Education System (NCOES) and Officer Education System (OES).

CONTINUOUS TRAINING

Combatives training must not end upon graduation from a training course. For soldiers to develop their abilities, the majority of the training must happen outside of the institutional training environment. Units must develop their own combatives programs to spur troop involvement and encourage commanders to invest resources.

COMPETITION

Competition is the principal motivational tool used to spur combatives training. Competitions should not only be used to encourage excellence by giving soldiers a chance to be unit champions, but also to make fighting ability an integral part of soldiering.

DRILLS

Combatives drills reinforce soldiers' basic skills through repetition. They can be used as part of a warm-up and integrated with calisthenics. Combatives drills should be an integral part of daily physical training.

LIVE TRAINING

Live training involves training against a fully resistant training partner; which approaches the reality of combat. There are many different methods of live training. Each has its own strengths and weaknesses; therefore, leaders should combine several approaches to ensure proper training.

INTEGRATED TRAINING

Combative engagements do not happen in a vacuum; they happen as part of a mission. To give soldiers the tools they need to successfully complete their missions, combatives must become an integral part of the training.

COMBAT FEEDBACK

When soldiers are engaged in hand-to-hand combat, they acquire new information about combatives. These lessons must be captured and analyzed so that the Combatives Program evolves to fit the needs of soldiers. Through combat feedback, the following lessons have been learned:

- Every fight is a grappling fight. Of course, this does not mean that there is no striking; every fight also involves striking, but always as an integral part of grappling. Every fight is over weapons. Control of this element will most likely determine the outcome of the fight.
- There is no shortcut to developing fighting skill. It can be developed only by a systematic approach to training, or in any realistic environment that combatives may be needed. Train first, to build skills, and then put them in the context of the mission.

SECTION II. LIVE TRAINING

Live training is executing techniques in real time with a fully resistant opponent. In combatives, live training includes various types of sparring:

- Ground-sparring.
- Clinch-sparring.
- Standing strikes sparring.
- Full sparring.

GROUND-SPARRING

Ground-sparring is limited to ground-fighting techniques. In ground-sparring, fighters begin by facing each other on their knees. While sparring, both fighters display aggressiveness and superior technique.

Ground-sparring techniques consist of—

- Situational sparring.
- Limited sparring.
- Sparring with strikes.

SITUATIONAL SPARRING

In situational sparring, soldiers assume a set position to work on a specific technique and reset upon meeting certain objectives. This type of training is key to developing well-rounded fighters.

LIMITED SPARRING

In limited sparring, soldiers can use only a limited number of techniques (e.g., sparring for dominant position, submissions with chokes only).

GROUND-SPARRING WITH STRIKES

When ground-sparring with strikes, open-hand strikes should be used to the head, and closed-fist strikes should be used to the body. The appropriate level of force should be used to promote safety and provide sufficient motivation to learn proper defense.

Ground-Sparring with Weapons

Fighting over who controls the weapons is an integral part of actual hand-to-hand combat on the battlefield. The use of training weapons such as long arms, pistols, and bladed weapons must be an integral part of training to put all of the other techniques and methods into proper context.

CLINCH-SPARRING

Clinch-sparring occurs at a close range. Clinch-sparring techniques consist of—

- Pummeling.
- Clinch with knee strikes.
- Sparring for takedowns.
- Clinch with knee strikes to a takedown.

Pummeling

Pummeling is sparring for dominant arm position only. In pummeling, soldiers begin in a neutral position and fight for dominant position (e.g., double underhooks or neck control).

Clinch with Knee Strikes

While pummeling for dominant arm position, soldiers try to create openings in their training partner's position to land controlled strikes with their knees. This allows soldiers to better understand the actions involved in creating, exploiting, and defending openings.

Note: For best results, this type of sparring should be done lightly and for longer periods of time (twenty minutes or more is common).

Sparring for Takedowns

Sparring for takedowns involves sparring from the standing position. This type of training will typically cause soldiers to take a lower, crouching stance, which makes them vulnerable to knee strikes. Instructors should follow this training with clinch-sparring to reinforce good posture.

Note: Sparring for takedowns can and should be conducted both with and without a uniform top. Soldiers must be able to exploit an enemy's clothing, but they should not become dependent on it.

Clinch with Knee Strikes to a Takedown

The clinch with knee strikes to a takedown combines all techniques of the clinch range. When using this technique, soldiers begin with their arms in a neutral posture and pummel for dominant position, while effecting strikes and takedowns. This type of clinch-sparring is the most effective, but it requires a high level of skill and cooperation from both training partners.

STANDING STRIKES SPARRING

To be effective in standing strike sparring, fighters must be within striking range of the opponent to apply full-force strikes and kicks. Standing strikes sparring techniques consist of—

- Jab sparring.
- Body boxing.
- Boxing.
- Kickboxing.
- Kickboxing with takedowns.

Jab Sparring

Jab sparring is used as an introduction to sparring with strikes and remains important as a means of developing both a good jab and the ability to defend the jab.

Body Boxing

Usually used for beginners only, body boxing is boxing where only body punches are allowed. This type of sparring allows new fighters to become comfortable with sparring before punches to the head are allowed. Body boxing also forces fighters to become accustomed to exchanging blows with a partner at a close range.

Note: Allowing punches to the head too early can cause some fighters to become punch shy (overly cautious of being hit), which hinders their development.

Boxing

Boxing is sparring where only punches to the head and torso are allowed. Boxing is the foundation of striking-skill development and should not be neglected.

Kickboxing

Kickboxing is sparring where punches and kicks are allowed.

Note: Kicks should not be limited to the upper body, as is common in some martial arts.

Kickboxing with Takedowns

Kickboxing with takedowns can be done with boxing gloves, headgear, and no uniform top, or with no gloves and a uniform top (lack of gloves makes grasping it possible). In the latter, open-hand strikes to the head and closed-fist strikes to the body are allowed.

FULL SPARRING

Full sparring combines all other methods of sparring. It is less useful than other forms of sparring because the more skillful or physically gifted fighter only trains in his best position and his partner in his worst.

CHAPTER 6
COVER, CONCEALMENT, AND CAMOUFLAGE

If the enemy can see you and you are within range of his weapon system, he can engage and possibly kill you. So, you must be concealed from enemy observation and have cover from enemy fire. When the terrain does not provide natural cover and concealment, you must prepare your cover and use natural and man-made materials to camouflage yourself, your equipment, and your position. This chapter provides guidance on the preparation and use of cover, concealment, and camouflage, except for fighting positions, which are covered in chapter 7.

SECTION I. COVER

Cover, made of natural or man-made materials, gives protection from bullets, fragments of exploding rounds, flame, nuclear effects, biological and chemical agents, and enemy observation (Figure 6-1). (Chapter 7 discusses cover for fighting positions.)

Figure 6-1. Natural cover.

NATURAL COVER

Natural cover includes logs, trees, stumps, rocks, and ravines; whereas, man-made cover includes fighting positions, trenches, walls, rubble, and craters. To get protection from enemy fire in the offense or when moving, use routes that put cover between you and the enemy. For example, use ravines, gullies, hills, wooded areas, walls, and any other cover that will keep the enemy from seeing and firing at you (Figure 6-2). Avoid open areas, and never skyline yourself on a hilltop or ridge. Any cover—even the smallest depression or fold in the ground—can help protect you from direct and indirect enemy fire.

Figure 6-2. Cover along a wall.

MAN-MADE COVER

Man-made cover includes fighting positions and protective equipment.

FIGHTING POSITION

See chapter 7 for a detailed discussion of fighting positions (Figure 6-3).

PROTECTIVE EQUIPMENT

Man-made cover can also be an article of protective equipment that can be worn, such as body armor and helmet (Figure 6-4). Body armor is protective equipment that works as a form of armor to minimize injury from fragmentation and bullets. The interceptor body armor (IBA) system has an outer tactical vest (OTV) which is lined with finely woven Kevlar that will stop a 9-mm round and other slower-moving fragments. It also has removable neck, throat, shoulder, and groin protection. Two small-arms protective inserts may also be added to the front and back of the vest, with each plate designed to stop 7.62-mm rounds. The plates are constructed of boron carbide ceramic with a shield backing that breaks down projectiles and halts their momentum. The vest also meets stringent performance specifications related to flexibility and heat-stress requirements. The advanced combat helmet (ACH) provides protection against fragmentation and bullets, as well as heat and flame in a balanced and stable configuration.

Figure 6-4. Body armor and helmet.

Figure 6-5. Protective cover against chemical/biological warfare agents.

SIMPLIFIED COLLECTIVE PROTECTION EQUIPMENT

The M20 simplified collective protection equipment (SCPE) is an inflatable shelter that provides cover against chemical/biological warfare agents and radioactive particles (Figure 6-5). The SCPE provides a clean-air environment in a structure where you can perform your duties, without wearing individual protective equipment.

SECTION II. CONCEALMENT

Concealment is anything that hides you from enemy observation (Figure 6-6). Concealment does not protect you from enemy fire. Do not think that you are protected from the enemy's fire just because you are concealed. Concealment, like cover, can also be natural or soldier-made. (Chapter 7 discusses techniques for concealing fighting positions.)

Figure 6-6. Concealment.

NATURAL CONCEALMENT

Natural concealment includes bushes, grass, and shadows. If possible, natural concealment should not be disturbed. Man-made concealment includes army combat uniforms (ACUs), camouflage nets, face paint, and natural materials that have been moved from their original location. Man-made concealment must blend into natural concealment provided by the terrain.

ACTIONS AS CONCEALMENT

Light, noise, and movement discipline, and the use of camouflage, contributes to concealment. Light discipline is controlling the use of lights at night by such things as not smoking in the open, not walking around with a flashlight on, and not using vehicle headlights. Noise discipline is taking action to deflect sounds generated by your unit (such as operating equipment) away from the enemy and, when possible, using methods to communicate that do not generate sounds (arm-and-hand signals). Movement discipline includes not moving about fighting positions unless necessary and not moving on routes that lack cover and concealment. In the defense, build a well-camouflaged fighting position and avoid moving about. In the offense, conceal yourself and your equipment with camouflage, and move in woods or on terrain that gives concealment. Darkness cannot hide you from enemy observation in either offense or defense situations. The enemy's night vision devices (NVD) and other detection means allow them to find you in both daylight and darkness.

SECTION III. CAMOUFLAGE

Camouflage is anything you use to keep yourself, your equipment, and your position from being identified. Both natural and man-made material can be used for camouflage. Change and improve your camouflage often. The time between changes and improvements depends on the weather and on the material used. Natural camouflage will often die, fade, or otherwise lose its effectiveness. Likewise, man-made camouflage may wear off or fade and, as a result, soldiers, their equipment, and their positions may stand out from their surroundings. To make it difficult for the enemy to spot them, soldiers should remember the following when using or wearing camouflage: (Chapter 7 discusses techniques for camouflaging fighting positions.)

MOVEMENT

Movement and activity draw attention. When you give arm-and-hand signals or walk about your position, your movement can be seen by the naked eye at long ranges. In the defense, stay low. Move only when necessary. In the offense, move only on covered and concealed routes.

POSITIONS

Avoid putting anything where the enemy expects to find it. Build positions on the side of a hill, away from road junctions or lone buildings, and in covered and concealed places. Avoid open areas.

OUTLINES AND SHADOWS

These can reveal your position or equipment to an air or ground observer. Break up outlines and shadows with camouflage. When moving, try to stay in the shadows.

SHINE

A shine will naturally attract the enemy's attention. In the dark, a burning cigarette or flashlight will give you away. In daylight, reflected light from any polished surface such as

shiny mess gear, a worn helmet, a windshield, a watch crystal and band, or exposed skin will do it. Any light, or reflection of light, can help the enemy detect your position. To reduce shine, cover your skin with clothing and face paint. Dull equipment and vehicle surfaces with paint, mud, or other camouflaging material or substance.

WARNING

★ **In a nuclear attack, darkly painted skin can absorb more thermal energy and may burn more readily than bare skin.**

SHAPE

Certain shapes, such as a helmet or human being, are easily recognizable. Camouflage, conceal, and break up familiar shapes to make them blend in with their surroundings, but avoid overdoing it.

COLORS

If your skin, uniform, or equipment colors stand out against the background, the enemy can obviously detect you more easily than he could otherwise. For example, ACUs stand out against a backdrop of snow-covered terrain. Once again, camouflage yourself and your equipment to blend with the surroundings (Figure 6-7).

Figure 6-7. Soldier in arctic camouflage.

DISPERSION

This means spreading soldiers, vehicles, and equipment over a wide area. The enemy can detect a bunch of soldiers more easily than they can detect a lone soldier. Spread out. Unit standard operating procedures (SOP) or unit leaders vary distances between you and your fellow soldiers depending on the terrain, degree of visibility, and enemy situation.

PREPARATION

Before camouflaging, study the terrain and vegetation of the area in which you are operating. Next, pick and use the camouflage material that best blends with the area (Figure 6-8). When moving from one area to another, change camouflage as needed to blend with the surroundings. Take grass, leaves, brush, and other material from your location and apply it to your uniform and equipment, and put face paint on your skin.

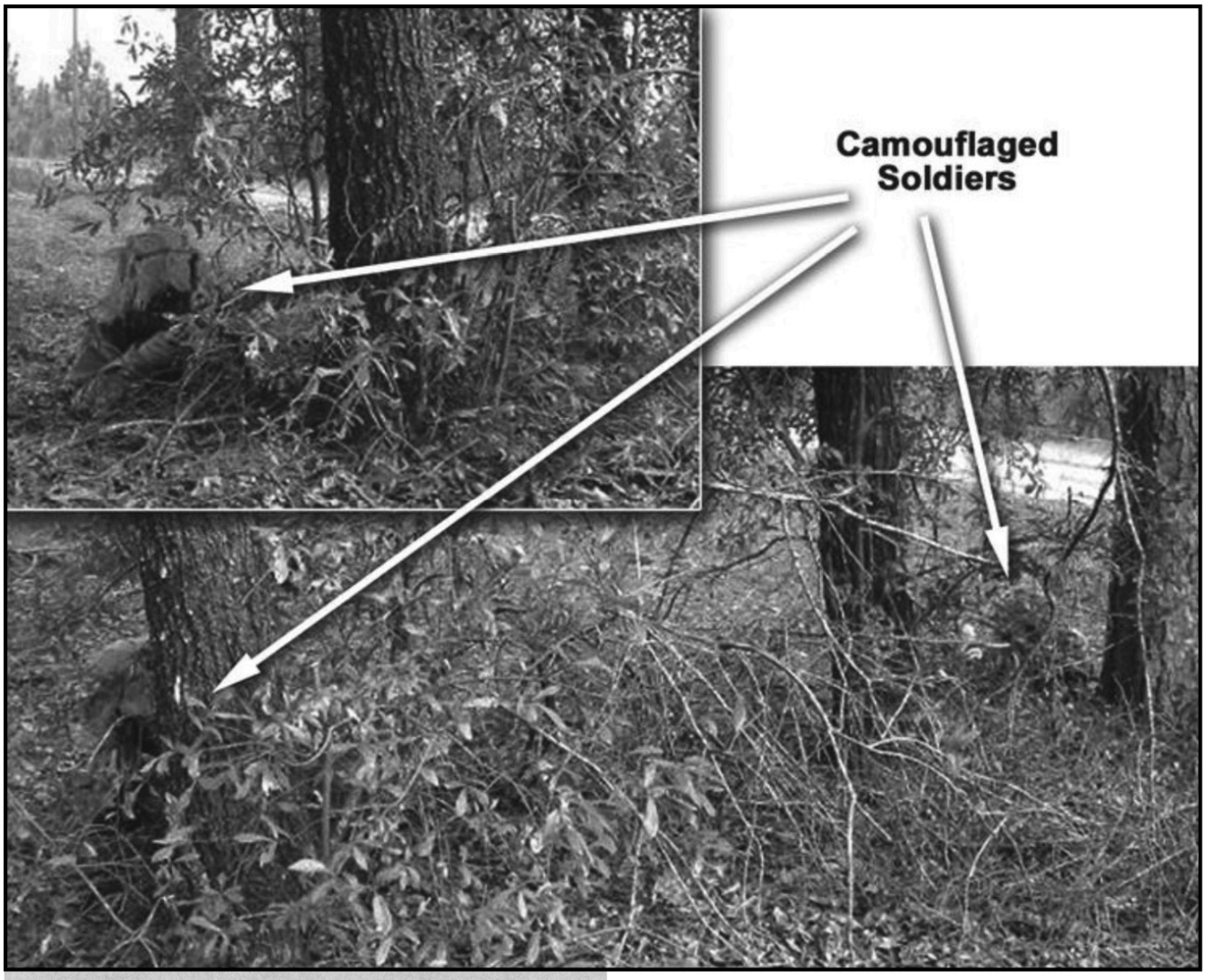


Figure 6-8. Camouflaged soldiers.

INDIVIDUAL TECHNIQUES

HELMET

Camouflage your helmet with the issue helmet cover or make a cover of cloth or burlap that is colored to blend with the terrain (Figure 6-9). Leaves, grass, or sticks can also be attached to the cover. Use camouflage bands, strings, burlap strips, or rubber bands to hold those in place. If you have no material for a helmet cover, disguise and dull helmet surface with irregular patterns of paint or mud.

Figure 6-9. Camouflaged helmet.

UNIFORM

The ACU has a jacket, trousers, and patrol cap in a new universal camouflage pattern. However, it may be necessary to add more camouflage to make the uniform blend better with the surroundings. To do this, put mud on the uniform or attach leaves, grass, or small branches to it. Too much camouflage, however, may draw attention. When operating on snow-covered ground wear overwhites (if issued) to help blend with the snow. If overwhites are not issued, use white cloth, such as white bed sheets, to get the same effect.

SKIN

Exposed skin reflects light and may draw the enemy's attention. Even very dark skin, because of its natural oil, will reflect light. The advanced camouflage face paint in compact form comes

both with and without insect repellent. The active ingredient of the repellant is N, N-diethyl-m-toluamide (commonly known as DEET). The camouflage face paint provides visual and near-infrared (IR) camouflage protection. The version with DEET also repels insects for eight hours. Both are furnished in compact form and contain a full-size, unbreakable, stainless-steel mirror. Both compacts contain five compartments of pigmented formulations (green, loam, sand, white, and black). The compacts provide sufficient material for twenty applications of green, loam, and sand, and ten applications of black and white. The compact is suitable for multiterrain environmental conditions from arctic to desert. Face paints with insect repellent are supplied in a tan-colored compact, while the non-repellent face paints are furnished in an olive-drab compact for quick identification (Figure 6-10). When applying camouflage to your skin, work with a buddy (in pairs) and help each other. Apply a two-color combination of camouflage pigment in an irregular pattern. Do not apply camouflage paint if there is a chance of frostbite. The pigment may prevent other soldiers from recognizing the whitish discoloration, the first symptoms of the skin freezing.

Figure 6-10. Advanced camouflage face paint.

Note: Advanced camouflage face paint with insect repellent, national stock number (NSN) 6840-01-493-7334, or without insect repellent, NSN 6850-01-493-7309.

Paint shiny areas (forehead, cheekbones, nose, ears, and chin) with a dark color. Paint shadow areas (around the eyes, under the nose, and under the chin) with a light color. In addition to the face, paint the exposed skin on the back of the neck, arms, and hands. Palms of hands are not normally camouflaged if arm-and-hand signals are to be used. Remove all

jewelry to further reduce shine or reflection. When camouflage sticks/compacts are not issued, use burnt cork, bark, charcoal, lamp black, or light-colored mud (Table 6-1).

CAMOUFLAGE MATERIAL	SKIN COLOR LIGHT OR DARK	SHINE AREAS FOREHEAD, CHEEKBONES, EARS, NOSE AND CHIN	SHADOW AREAS AROUND EYES, UNDER NOSE, AND UNDER CHIN
LOAM AND LIGHT GREEN STICK	ALL TROOPS USE IN AREAS WITH GREEN VEGETATION	USE LOAM	USE LIGHT GREEN
SAND AND LIGHT GREEN STICK	ALL TROOPS USE IN AREAS LACKING GREEN VEGETATION	USE LIGHT GREEN	USE SAND
LOAM AND WHITE	ALL TROOPS USE ONLY IN SNOW-COVERED TERRAIN	USE LOAM	USE WHITE
BURNT CORK, BARK CHARCOAL, OR LAMP BLACK	ALL TROOPS, IF CAMOUFLAGE STICKS NOT AVAILABLE	USE	DO NOT USE
LIGHT-COLOR MUD	ALL TROOPS, IF CAMOUFLAGE STICKS NOT AVAILABLE	DO NOT USE	USE

Table 6-1. Application of camouflage face paint to skin.

Figure 6-3. Man-made cover.

CHAPTER 7
FIGHTING POSITIONS

Whether your unit is in a defensive perimeter or on an ambush line, you must seek cover from fire and concealment from observation. From the time you prepare and occupy a fighting position, you should continue to improve it. How far you get depends on how much time you have, regardless of whether it is a hasty position or a well-prepared one with overhead cover (OHC). This chapter discusses—

- Cover and concealment.
- Sectors and fields of fire.
- Hasty and deliberate fighting positions.

COVER

To get this protection in the defense, build a fighting position to add to the natural cover afforded by the terrain (Figure 7-1). The cover of your fighting position will protect you from small-arms fire and indirect fire fragments and place a greater thickness of shielding material or earth between you and the blast wave of nuclear explosions.

Figure 7-1. Man-made cover.

Three different types of cover—overhead, frontal, and flank/rear cover—are used to make fighting positions. In addition, positions can be connected by tunnels and trenches. These allow soldiers to move between positions for engagements or resupply, while remaining protected. (Chapter 6 discussed cover in general.)

OVERHEAD COVER

Your completed position should have OHC, which enhances survivability by protecting you from indirect fire and fragmentation.

FRONTAL COVER

Your position needs frontal cover to protect you from small-arms fire to the front. Frontal cover allows you to fire to the oblique, as well as to hide your muzzle flash.

FLANK AND REAR COVER

When used with frontal and overhead cover, flank and rear cover protects you from direct enemy and friendly fire (Figure 7-2). Natural frontal cover such as rocks, trees, logs, and rubble is best, because it is hard for the enemy to detect. When natural cover is unavailable, use the dirt you remove to construct the fighting position. You can improve the effectiveness of dirt as a cover by putting it in sandbags. Fill them only three-quarters full.

Figure 7-2. Cover.

CONCEALMENT

If your position can be detected, it can be hit by enemy fire. Therefore, your position must be so well hidden that the enemy will have a hard time detecting it, even after he reaches hand-grenade range. (Chapter 6 discussed cover in general.)

NATURAL, UNDISTURBED MATERIALS

Natural, undisturbed concealment is better than man-made concealment. While digging your position, try not to disturb the natural concealment around it. Put the unused dirt from the hole behind the position and camouflage it. Camouflage material that does not have to be replaced (rocks, logs, live bushes, and grass) is best. Avoid using so much camouflage that your position looks different from its surroundings. Natural, undisturbed concealment materials —

- Are already prepared.
- Seldom attract enemy attention.
- Need no replacement.

MAN-MADE CONCEALMENT

Your position must be concealed from enemy aircraft as well as from ground troops. If the position is under a bush or tree, or in a building, it is less visible from above. Spread leaves, straw, or grass on the floor of the hole to keep freshly dug earth from contrasting with the ground around it. Man-made concealment must blend with its surroundings so that it cannot be detected, and it must be replaced if it changes color or dries out.

CAMOUFLAGE

When building a fighting position, camouflage it and the dirt taken from it. Camouflage the dirt used as frontal, flank, rear, and overhead cover (OHC). Also, camouflage the bottom of the hole to prevent detection from the air. If necessary, take excess dirt away from the position (to the rear).

- Too much camouflage material may actually disclose a position. Get your camouflage material from a wide area. An area stripped of all or most of its vegetation may draw attention. Do not wait until the position is complete to camouflage it. Camouflage the position as you build.
- Hide mirrors, food containers, and white underwear and towels. Do not remove your shirt in the open. Your skin may shine and be seen. Never use fires where there is a chance that the flame will be seen or the smoke will be smelled by the enemy. Also, cover up tracks and other signs of movement. When camouflage is complete, inspect the position from the enemy's side. This should be done from about thirty-eight feet (thirty-five meters) forward of the position. Then check the camouflage periodically to ensure it is natural-looking and conceals the position. When the camouflage no longer works, change and improve it.

SECTORS AND FIELDS OF FIRE

Although a fighting position should provide maximum protection for you and your equipment, the primary consideration is always given to sectors of fire and effective weapons employment. Weapons systems are sited where natural or existing positions are available, or where terrain will provide the most protection while maintaining the ability to engage the enemy. You should always consider how best to use available terrain, and how you can modify it to provide the best sectors of fire, while maximizing the capabilities of your weapon system.

SECTOR OF FIRE

A sector of fire is the area into which you must observe and fire. When your leader assigns you a fighting position, he should also assign you a primary and secondary sector of fire. The primary sector of fire is to the oblique of your position, and the secondary sector of fire is to the front.

FIELD OF FIRE

To be able to see and fire into your sectors of fire, you might have to "clear a field" of vegetation and other obstructions. Fields of fire are within the range of your weapons. A field of fire to the oblique lets you hit the attackers from an unexpected angle. It also lets you support the positions next to you. When you fire to the oblique, your fire interlocks with that of other positions, creating a wall of fire that the enemy must pass through. When clearing a field of fire—

- Avoid disclosing your position by careless or excessive clearing.
- Leave a thin, natural screen of vegetation to hide your position.
- In sparsely wooded areas, cut off lower branches of large, scattered trees.
- Clear underbrush only where it blocks your view.

- Remove cut brush, limbs, and weeds so the enemy will not spot them.
- Cover cuts on trees and bushes forward of your position with mud, dirt, or snow.
- Leave no trails as clues for the enemy.

HASTY AND DELIBERATE FIGHTING POSITIONS

The two types of fighting position are hasty and deliberate. Which you construct depends on time and equipment available, and the required level of protection. Fighting positions are designed and constructed to protect you and your weapon system. Table 7-1 shows the characteristics and planning considerations for fighting positions.

Type	Position	Estimated Construction Time (man-hours)	Equipment Requirements	Direct Small Caliber Fire	Indirect Fire Blast and Fragmentation (Near-Miss)*	Indirect Fire Blast and Fragmentation (Direct Hit)	Nuclear Weapons **	Remarks
Hasty	Crater	0.2	Hand tools	7.62 mm	Better than in open – no overhead protection	None	Fair	
	Skirmisher's trench	0.5	Hand tools	7.62 mm	Better than in open – no overhead protection	None	Fair	
	Prone position	1.0	Hand tools	7.62 mm	Better than in open – no overhead protection	None	Fair	Provides all-around cover
Deliberate	One-soldier position	3.0	Hand tools	12.7 mm	Medium artillery no closer than 30 ft – no overhead protection	None	Fair	
	One-soldier position with 1.5 ft overhead cover	8.0	Hand tools	12.7 mm	Medium artillery no closer than 30 ft	None	Good	Additional cover provides protection from direct hit small mortar blast
	Two-soldier position	6.0	Hand tools	12.7 mm	Medium artillery no closer than 30 ft – no overhead protection	None	Fair	
	Two-soldier position with 1.5 ft overhead cover	11.0	Hand tools	12.7 mm	Medium artillery no closer than 30 ft	None	Good	Additional cover provides protection from direct hit small mortar blast
	AT-4 position	3.0	Hand tools	12.7 mm	Medium artillery no closer than 30 ft – no overhead protection	None	Fair	

Note: Chemical protection is assumed because of individual protective masks and clothing.

* Shell sizes are:

	Small	Medium
Mortar	82mm	120mm
Artillery	105mm	152mm

* Nuclear protection ratings are rated poor, fair, good, very good, and excellent

Table 7-1. Characteristics of individual fighting positions.

HASTY FIGHTING POSITION

Hasty fighting positions, used when there is little time for preparation, should be behind whatever cover is available. However, the term hasty does not mean that there is no digging. If a natural hole or ditch is available, use it. This position should give frontal cover from enemy direct fire but allow firing to the front and the oblique. When there is little or no natural cover, hasty positions provide as much protection as possible. A shell crater, which is 2 to 3 feet

(0.61 to 1 meter) wide, offers immediate cover (except for overhead) and concealment. Digging a steep face on the side toward the enemy creates a hasty fighting position. A small crater position in a suitable location can later develop into a deliberate position. A skirmisher's trench is a shallow position that provides a hasty prone fighting position. When you need immediate shelter from enemy fire and there are no defilade firing positions available, lie prone or on your side, scrape the soil with an entrenching tool, and pile the soil in a low parapet between yourself and the enemy. In all but the hardest ground, you can use this technique to quickly form a shallow, body-length pit. Orient the trench so it is oblique to enemy fire. This keeps your silhouette low and offers some protection from small-caliber fire.

The prone position is a further refinement of the skirmisher's trench. It serves as a good firing position and provides you with better protection against the direct-fire weapons than the crater position or the skirmisher's trench. Hasty positions are further developed into deliberate positions that provide as much protection as possible. The hole should be about 18 inches (46 centimeters) deep; use the dirt from the hole to build cover around the edge of the position (Figure 7-3).

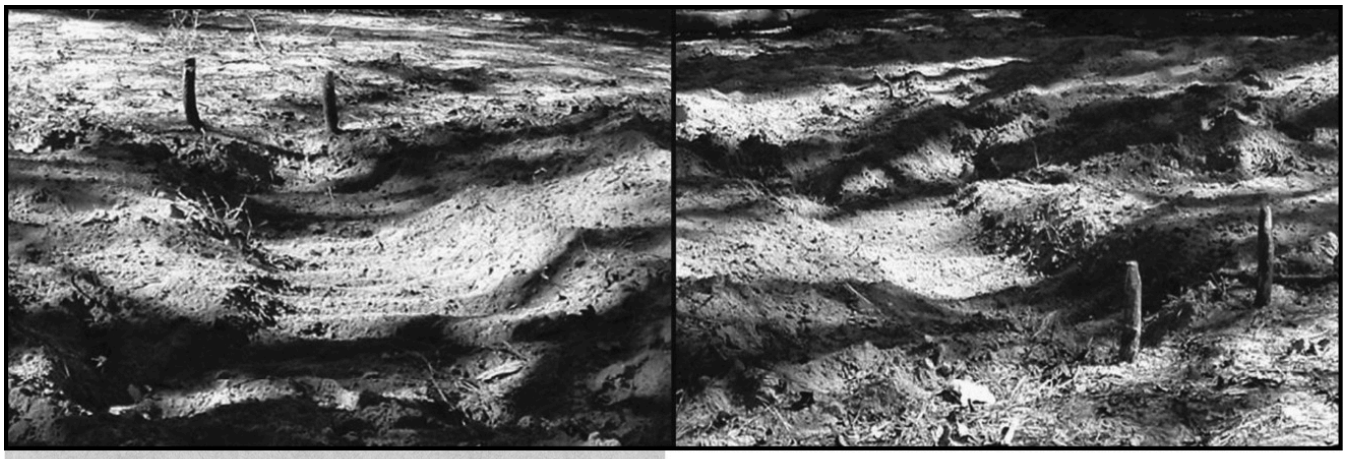


Figure 7-3. Prone position (hasty).

DELIBERATE FIGHTING POSITION

Deliberate fighting positions are modified hasty positions prepared during periods of relaxed enemy pressure. Your leader will assign the sectors of fire for your position's weapon system before preparation begins. Small holes are dug for automatic rifle bipod legs, so the rifle is as close to ground level as possible. Continued improvements are made to strengthen the position during the period of occupation. Improvements include adding OHC, digging grenade sumps, adding trenches to adjacent positions, and maintaining camouflage.

TWO-MAN FIGHTING POSITION

Prepare a two-man position in four stages. Your leader must inspect the position at each stage before you may move to the next stage (Table 7-2).

Parapets	***Overhead Cover***
Enable you to engage the enemy within your assigned sector of fire. ***Provide*** you with protection from direct fire. Construct parapets— *Thickness:* Minimum 39 inches (1m, length of M16 rifle) *Height:* 10 to 12 inches (25 to 30 centimeters, length of a bayonet) to the front, flank, and rear.	***Protect*** you from indirect fires. Your leaders will identify requirements for additional OHC based on threat capabilities. *Thickness:* Minimum 18 inches (46 cm) (length of open entrenching tool) *Concealment:* Use enough to make your position undetectable.

Table 7-2. Construction of two-man fighting position.

Note: If assigned an M4 rather than an M16-series weapon, add 7 inches (18 centimeters) to each dimension on all positions that refer to the M16, or to two-and-a-half M4 lengths.

OVERHEAD COVER

Overhead cover may be built up or down.

Built-Up Overhead Cover

Built-up OHC has cover that is built up to 18 inches (46 centimeters) to maximize protection/cover of the fighting position.

Stage 1

Establish sectors and decide whether to build OHC up or down. Your leaders must consider the factors of mission, enemy, terrain, troops and equipment, time available, and civil considerations (METT-TC) in order to make a decision on the most appropriate fighting position to construct. For example, due to more open terrain your leader may decide to use built-down OHC (Figure 7-4 and Figure 7-5):

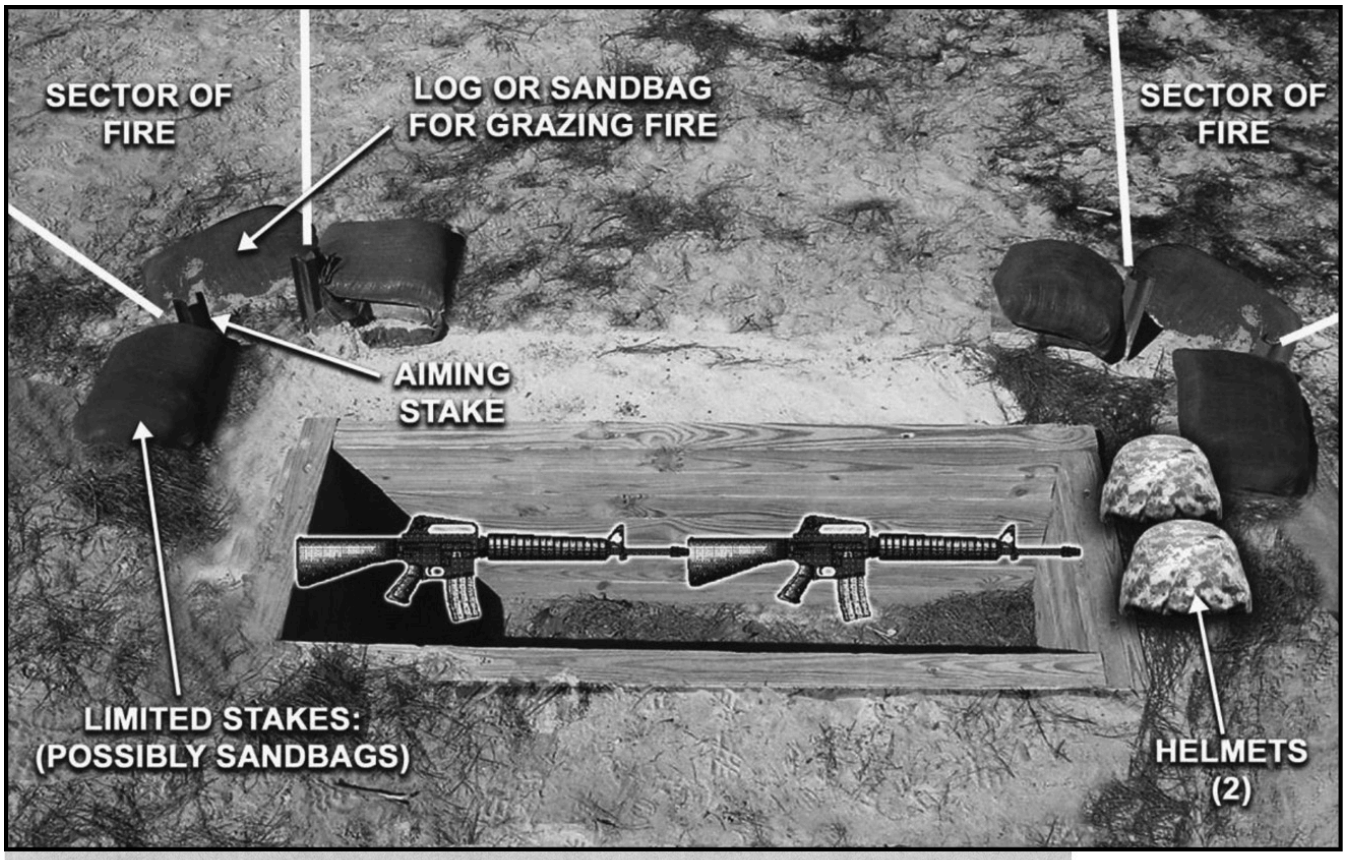


Figure 7-4. Establishment of sectors and building method.

Figure 7-5. Two-man fighting position (Stage 1).

1. Check fields of fire from the prone position.
2. Assign sector of fire (primary and secondary).
3. Emplace sector stakes (right and left) to define your sectors of fire. Sector stakes prevent accidental firing into friendly positions. Items such as tent poles, metal pickets, wooden stakes, tree branches, or sandbags will all make good sector stakes. The sector stakes must be sturdy and stick out of the ground at least 18 inches (46 centimeters); this will prevent your weapon from being pointed out of your sector.
4. Emplace aiming and limiting stakes to help you fire into dangerous approaches at night and at other times when visibility is poor. Forked tree limbs about 12 inches (30 centimeters) long make good stakes. Put one stake (possibly sandbags) near the edge of the hole to rest the stock of your rifle on. Then put another stake forward of the rear (first) stake/sandbag toward each dangerous approach. The forward stakes are used to hold the rifle barrel.
5. Emplace grazing fire logs or sandbags to achieve grazing fire 3 feet (1 meter) above ground level.

6. Decide whether to build OHC up or down, based on potential enemy observation of position.
7. Scoop out elbow holes to keep your elbows from moving around when you fire.
8. Trace position outline.
9. Clear primary and secondary fields of fire.

Note: Keep in mind that the widths of all the fighting positions are only an approximate distance. This is due to the individual soldier's equipment such as the IBA and the modular lightweight load-carrying equipment.

Stage 2
Place supports for OHC stringers and construct parapet retaining walls (Figure 7-6 and Figure 7-7):

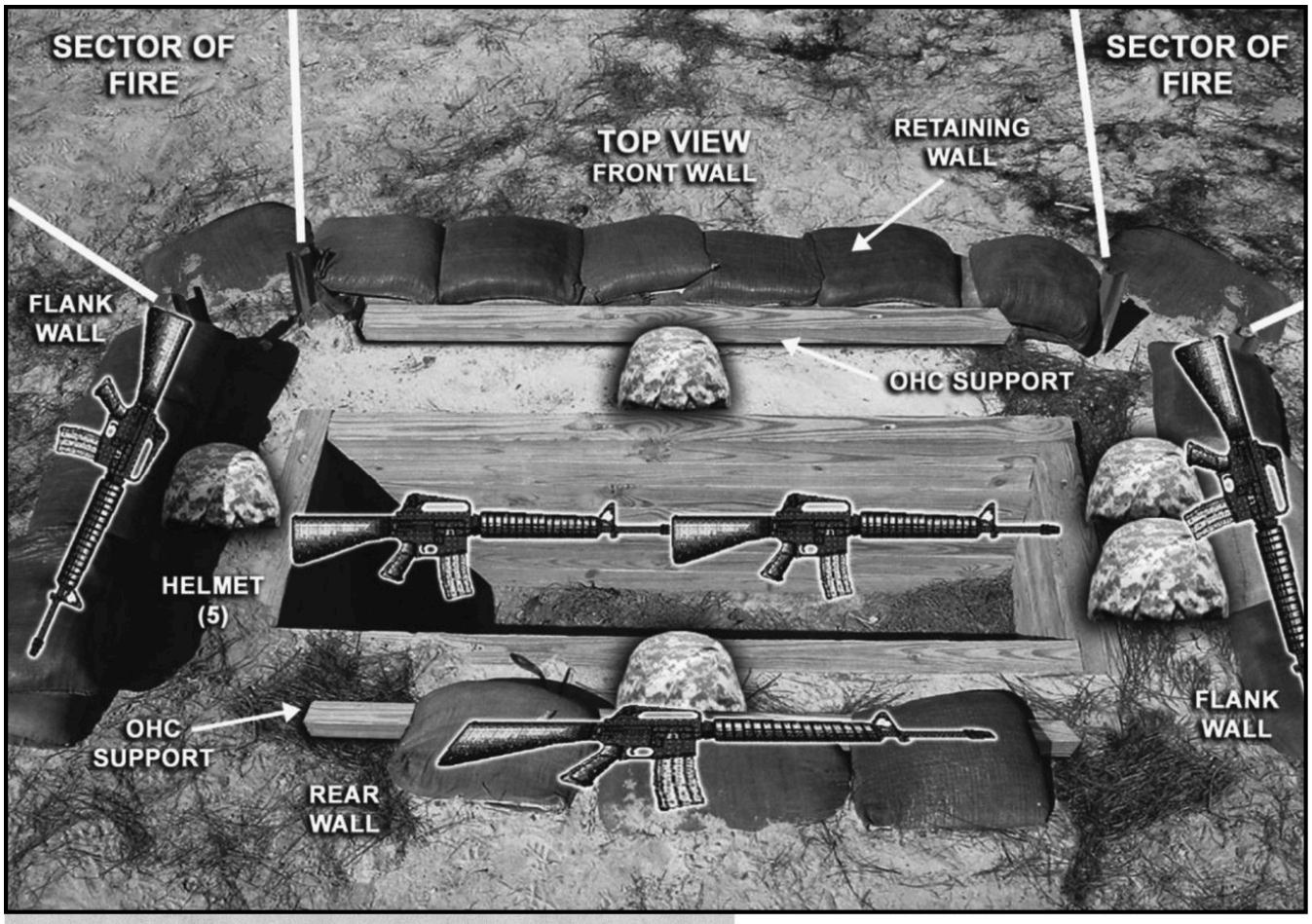


Figure 7-6. Placement of OHC supports and construction of retaining walls.

Figure 7-7. Two-man fighting position (Stage 2).

1. Emplace OHC supports to front and rear of position.
2. Ensure you have at least 12 inches (30 centimeters), which is about 1-helmet-length distance from the edge of the hole to the beginning of the supports needed for the OHC.
3. If you plan to use logs or cut timber, secure them in place with strong stakes from 2 to 3 inches (5 to 7 centimeters) in diameter and 18 inches (46 centimeters) long. Short U-shaped pickets will work.
4. Dig in about half the height.
    a. Front retaining wall—At least 10 inches (25 centimeters) high (two filled sandbags), and two M16s long.
    b. Rear retaining wall—At least 10 inches (25 centimeters) high, and one M16 long.
    c. Flank retaining walls—At least 10 inches (25 centimeters) high, and one M16 long.
5. Start digging hole; use soil to fill sandbags for walls.

Stage 3

Dig position and place stringers for OHC (Figure 7-8, Figure 7-9, and Figure 7-10):

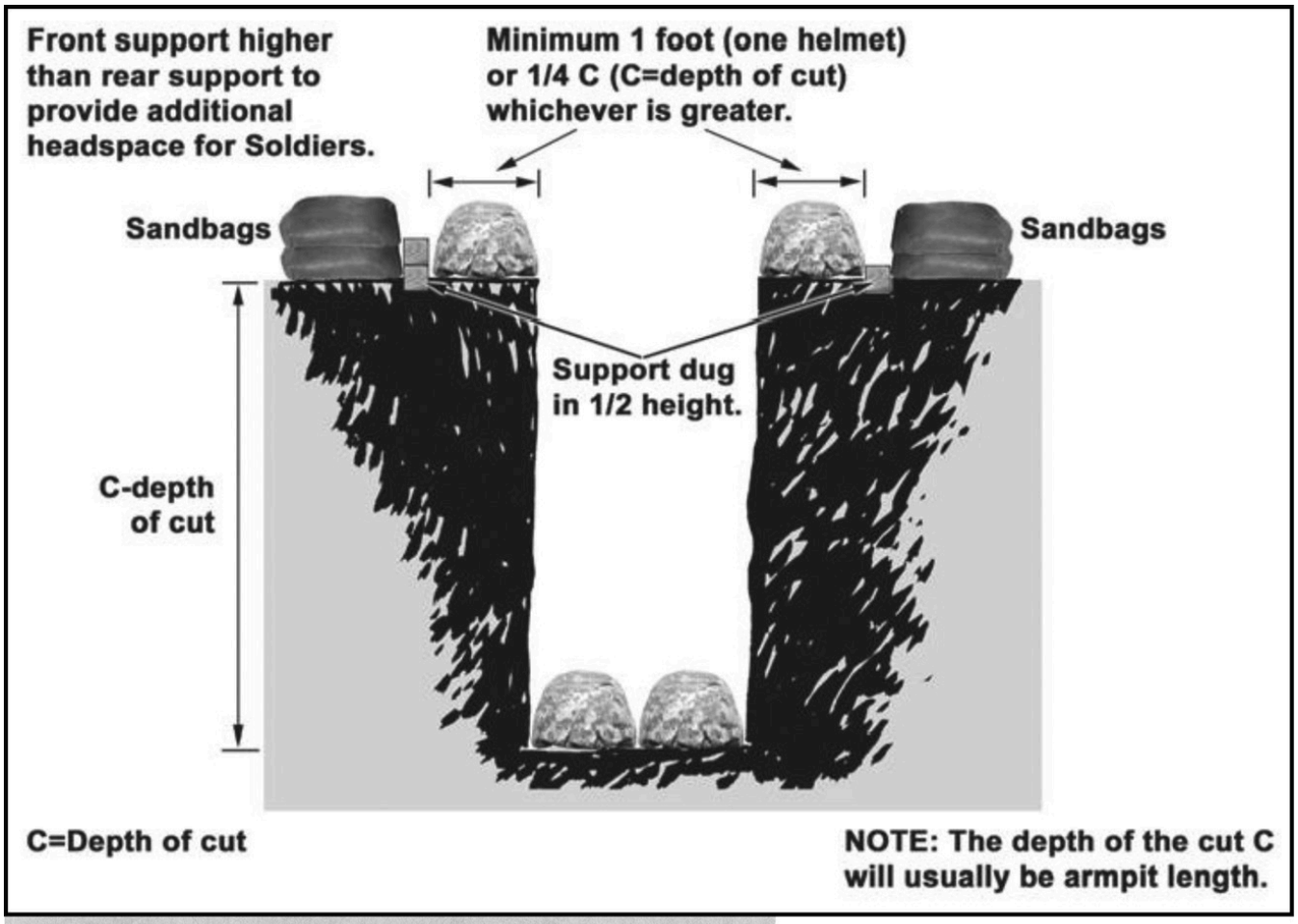


Figure 7-8. Digging of position (side view).

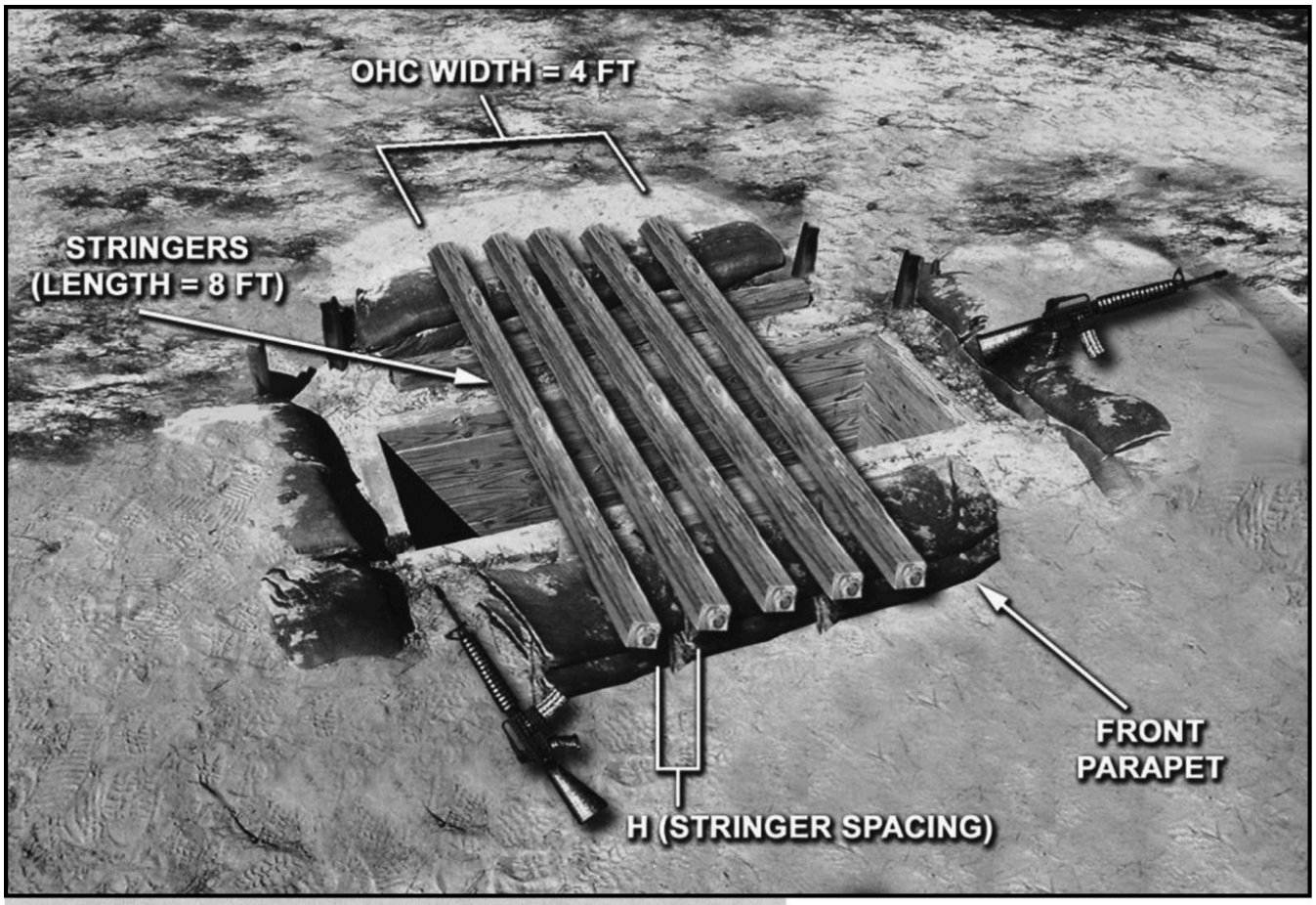


Figure 7-9. Placement of stringers for OHC.

Figure 7-10. Two-man fighting position (Stage 3).

1. Ensure maximum depth is armpit deep (if soil conditions permit).
2. Use spoil from hole to fill parapets in the order of front, flanks, and rear.
3. Dig walls vertically.
4. If site soil properties cause unstable soil conditions, construct revetments (Figure 7-11) and consider sloping walls.

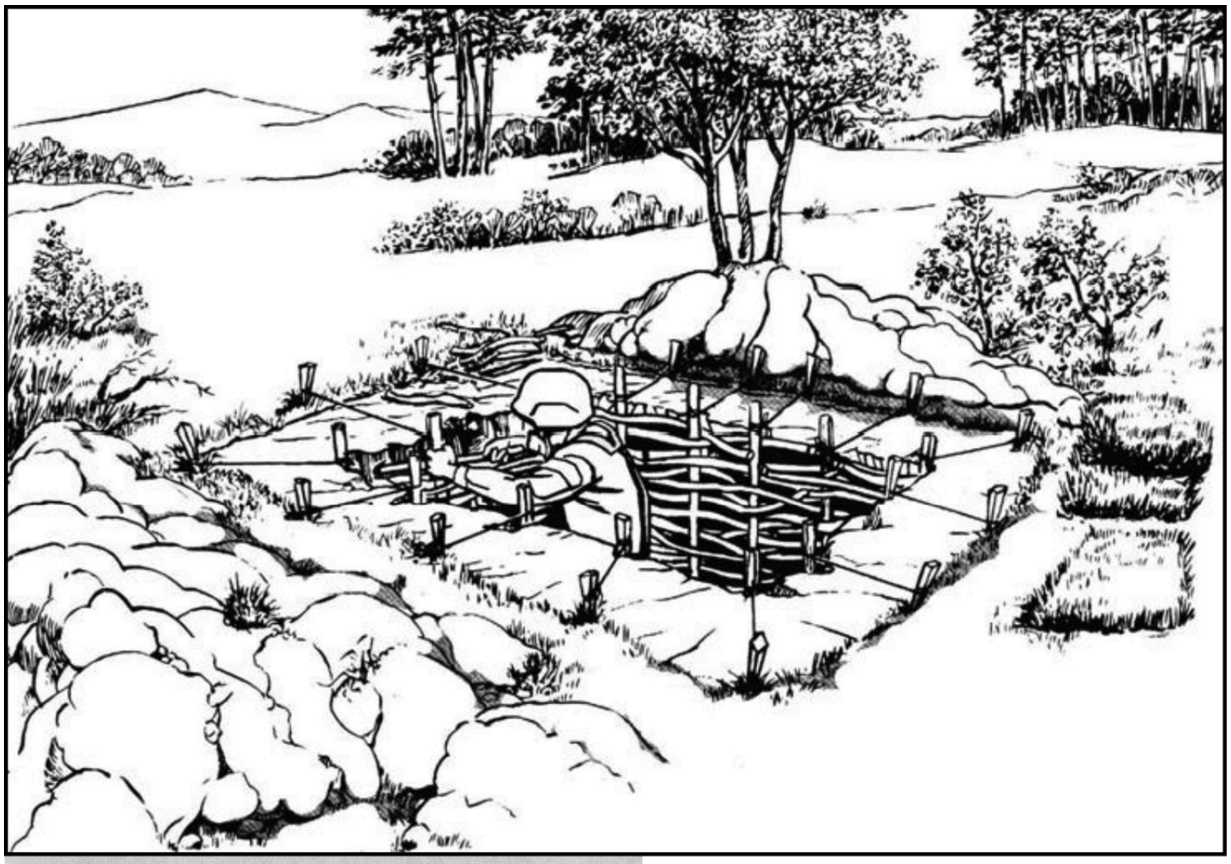


Figure 7-11. Revetment construction.

5. For sloped walls, first dig a vertical hole, and then slope walls at 1:4 ratio (move 12 inches [30 centimeters] horizontally for each 4 feet [1.22 meters] vertically).
6. Dig two grenade sumps in the floor (one on each end). If the enemy throws a grenade into the hole, kick or throw it into one of the sumps. The sump will absorb most of the blast. The rest of the blast will be directed straight up and out of the hole. Dig the grenade sumps as wide as the entrenching tool blade; at least as deep as an entrenching tool and as long as the position floor is wide (Figure 7-12).
7. Dig a storage compartment in the bottom of the back wall; the size of the compartment depends on the amount of equipment and ammunition to be stored (Figure 7-13).

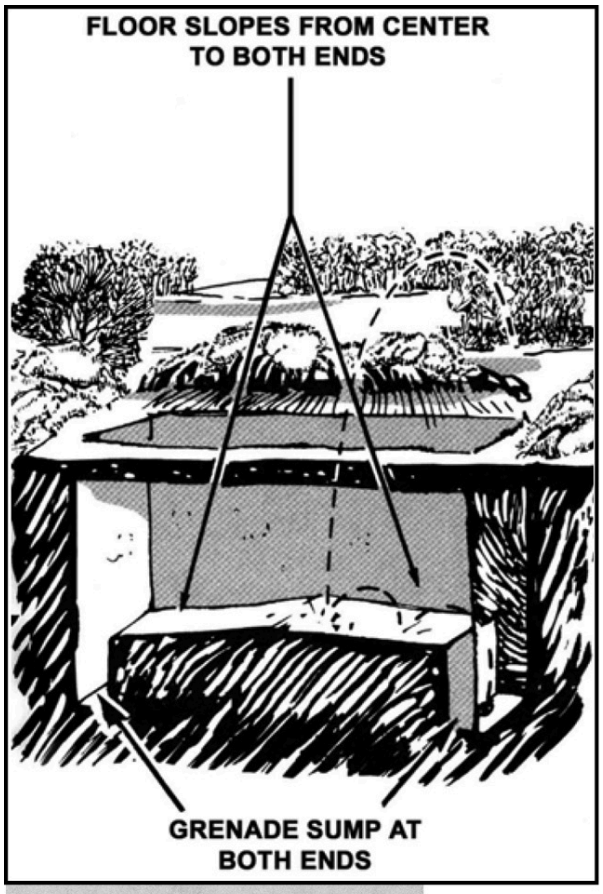


Figure 7-12. Grenade sumps.

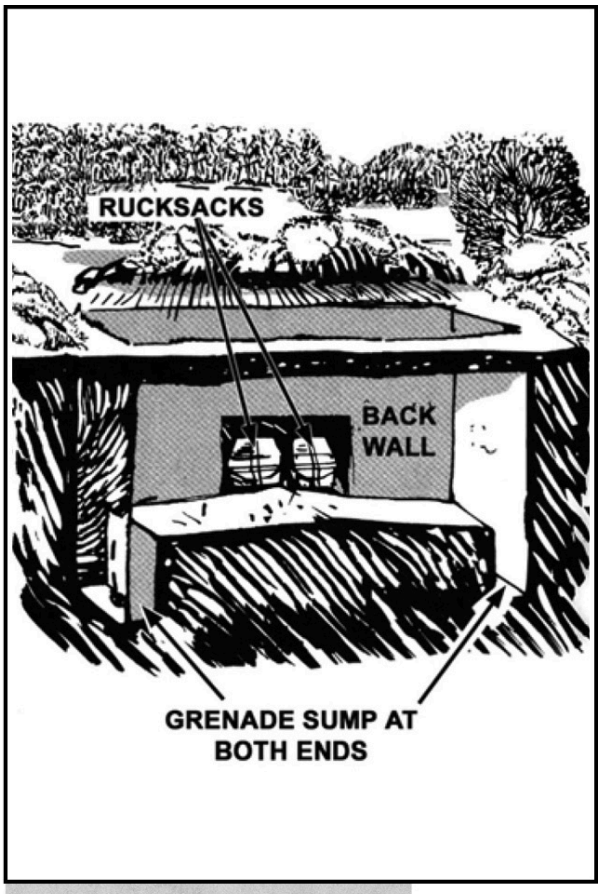


Figure 7-13. Storage compartments.

8. Install revetments to prevent wall collapse/cave-in:
    a. Required in unstable soil conditions.
    b. Use plywood or sheeting material and pickets to revet walls.
    c. Tie back pickets and posts.
    d. Emplace OHC stringers.
    e. Use 2x4s, 4x4s, or pickets ("U" facing down).
    f. Make OHC stringers standard length, which is 8 feet (2.4 meters). This is long enough to allow sufficient length in case walls slope.
    g. Use "L" for stringer length and "H" for stringer spacing.
9. Remove the second layer of sandbags in the front and rear retaining walls to make room for the stringers. Place the same sandbags on top of the stringers once you have the stringers properly positioned.

Stage 4

Install OHC and camouflage (Figure 7-14 and Figure 7-15):

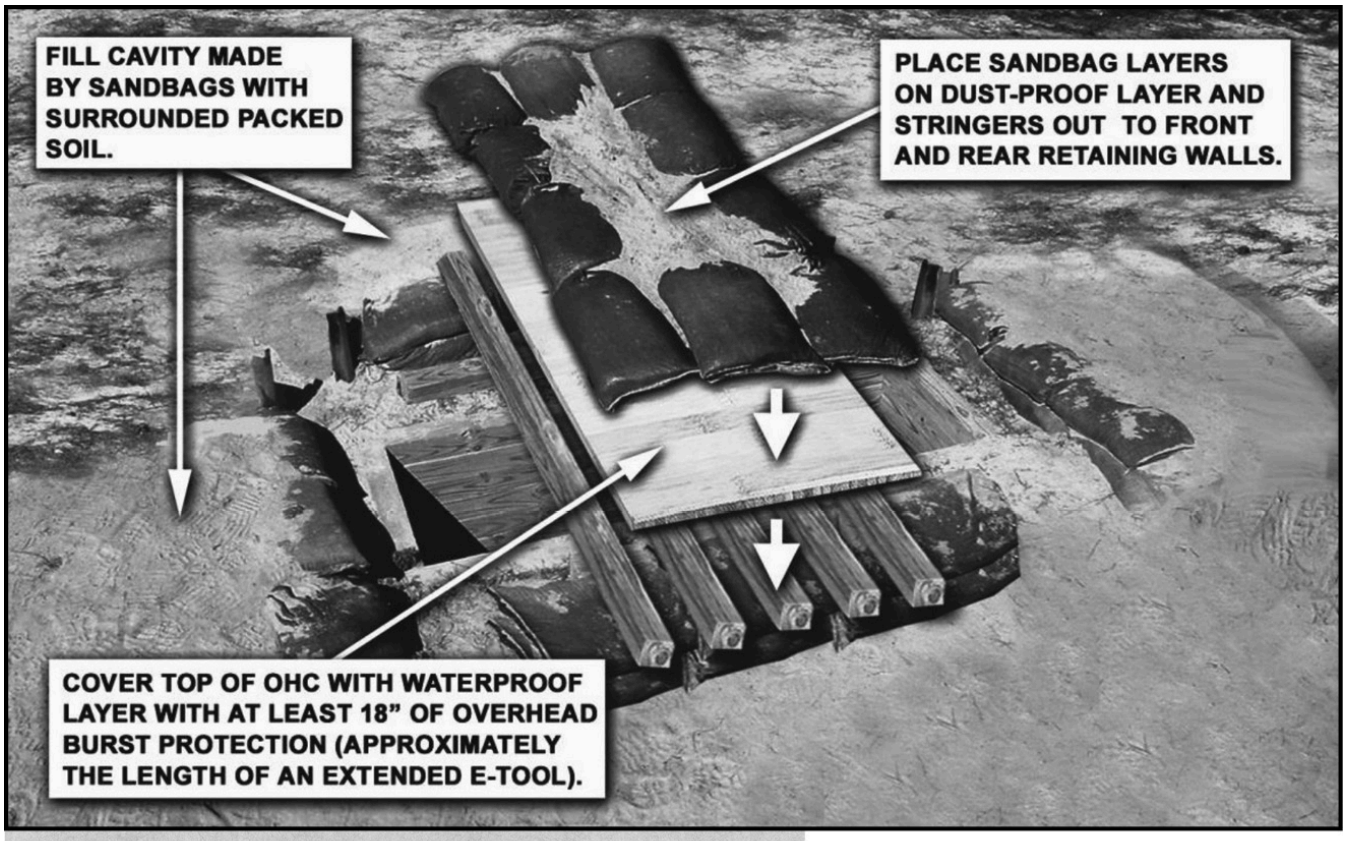


Figure 7-14. Installation of overhead cover.

Figure 7-15. Two-man fighting position with built-up OHC (Stage 4).

1. Install overhead cover.
2. Use plywood, sheeting mats as a dustproof layer (could be boxes, plastic panel, or interlocked U-shaped pickets). Standard dustproof layer is 4'x4' sheets of ¾-inch plywood centered over dug position.
3. Nail plywood dustproof layer to stringers.
4. Use at least 18 inches (46 centimeters) of sand-filled sandbags for overhead burst protection (four layers). At a minimum, these sandbags must cover an area that extends to the sandbags used for the front and rear retaining walls.
5. Use plastic or a poncho for waterproofing layer.
6. Fill center cavity with soil from dug hole and surrounding soil.
7. Use surrounding topsoil and camouflage screen systems.
8. Use soil from hole to fill sandbags, OHC cavity, and blend in with surroundings.

Built-Down Overhead Cover

This should not exceed 12 inches (30 centimeters). This lowers the profile of the fighting position, which aids in avoiding detection. Unlike a built-up OHC, a built-down OHC has the following traits (Table 7-3, Figure 7-16, and Figure 7-17):

Maximum 12 inches (30 centimeters) High

- You can build parapets up to 30 centimeters. Taper the overhead portions and parapets above the ground surface to conform to the natural lay of the ground.

Minimum Three M16s Long

- This gives you adequate fighting space between the end walls of the fighting position and the overhead cover. This takes 2.5 hours longer to dig in normal soil conditions.

Firing Platform for Elbows

- You must construct a firing platform in the natural terrain upon which to rest your elbows. The firing platform will allow the use of the natural ground surface as a grazing fire platform.

Table 7-3. Specifications for built-down overhead cover.

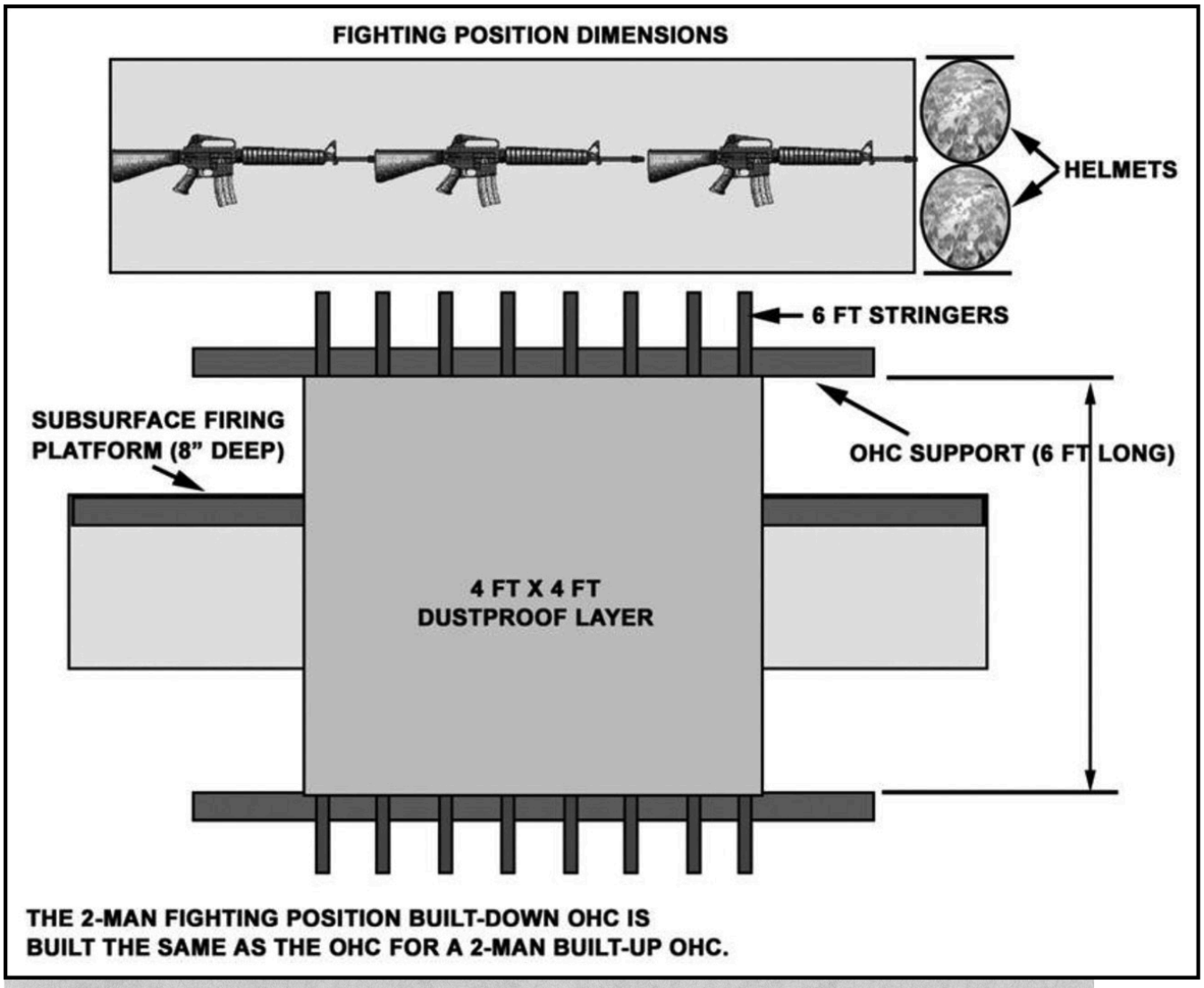


Figure 7-16. Two-man fighting position with built-down OHC (top view).

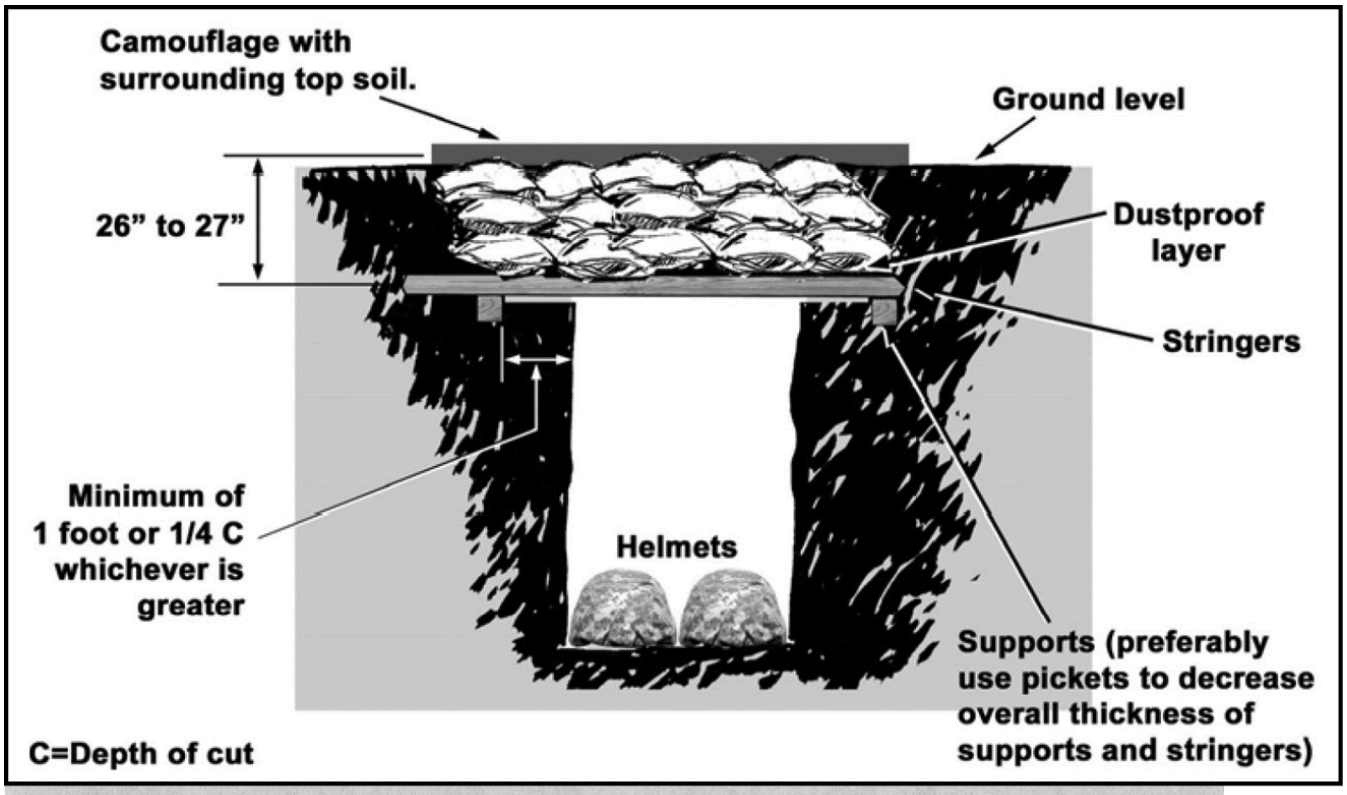


Figure 7-17. Two-man fighting position with built-down OHC (side view).

ONE-MAN FIGHTING POSITION

Sometimes you may have to build and occupy a one-man fighting position, for example, an ammunition bearer in a machine gun team. Except for its size, a one-man position is built the same way as a two-man fighting position. The hole of a one-man position is only large enough for you and your equipment. It does not have the security of a two-person position; therefore, it must allow a soldier to shoot to the front or oblique from behind frontal cover.

MACHINE GUN FIGHTING POSITION

Construct fighting positions for machine guns so the gun fires to the front or oblique. However, the primary sector of fire is usually oblique so the gun can fire across your unit's front. Two soldiers (gunner and assistant gunner) are required to soldier the weapon system. Therefore, the hole is shaped so both the gunner and assistant gunner can get to the gun and fire it from either side of the frontal protection. The gun's height is reduced by digging the tripod platform down as much as possible. However, the platform is dug to keep the gun traversable across the entire sector of fire. The tripod is used on the side with the primary sector of fire, and the bipod legs are used on the side with the secondary sector. When changing from primary to secondary sectors, the machine gun is moved but the tripod stays in place. With a three-soldier crew for a machine gun, the third soldier (ammunition bearer) digs a one-soldier fighting position to the flank. From this position, the soldier can see and shoot to the front and oblique. The ammunition bearer's position is connected to the gun position by a crawl trench so the bearer can transport ammunition or replace one of the gunners.

When a machine gun has only one sector of fire, dig only half of the position. With a three-man crew, the third soldier (the ammunition bearer) digs a one-man fighting position. Usually, his position is on the same side of the machine gun as its final protective line (FPL) or principal direction of fire (PDF). From that position, he can observe and fire into the machine gun's secondary sector and, at the same time, see the gunner and assistant gunner. The ammunition bearer's position is connected to the machine gun position by a crawl trench so that he can bring ammunition to the gun or replace the gunner or the assistant gunner.

Stage 1
Establish sectors (primary and secondary) of fire, and then outline position (Figure 7-18):

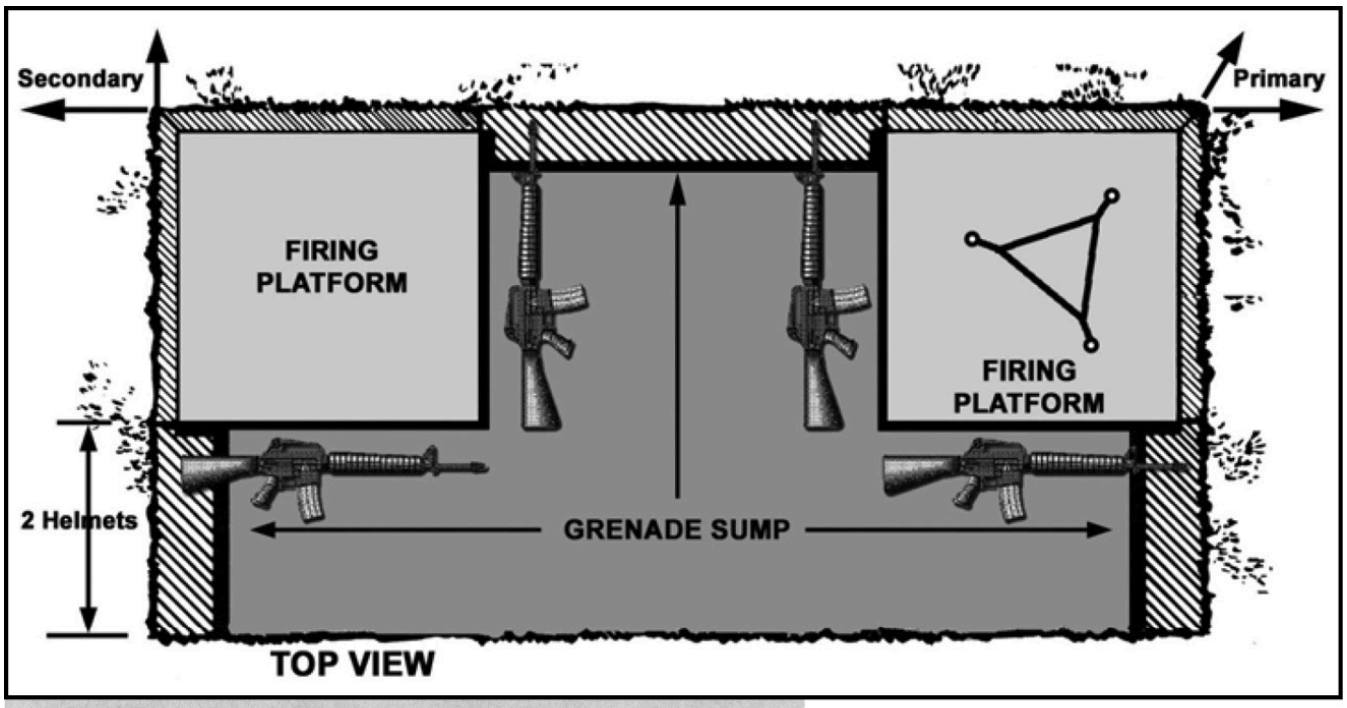


Figure 7-18. Position with firing platforms.

1. Check fields of fire from prone.
2. Assign sector of fire (primary and secondary) and final protective line (FPL) or principal direction of fire (PDF).
3. Emplace aiming stakes.
4. Decide whether to build OHC up or down, based on potential enemy observation of position.
5. Trace position outline to include location of two distinct firing platforms.
6. Mark position of the tripod legs where the gun can be laid on the FPL or PDF.
7. Clear primary and secondary fields of fire.

Note: The FPL is a line on which the gun fires grazing fire across the unit's front. Grazing fire is fired 3 feet (1 meter) above the ground. When an FPL is not assigned, a PDF is assigned. A PDF is a direction toward which the gun must be pointed when not firing at targets in other parts of its sector.

Stage 2
Dig firing platforms and emplace supports for OHC stringers, and then construct the parapet retaining walls:

1. Emplace OHC supports to front and rear of position.
2. Center OHC in position, and place supports as you did for Stage 2, two-man fighting position.
3. Construct the same as you did for Stage 2, two-man fighting position.
4. Dig firing platforms 6 to 8 inches (15 to 20 centimeters) deep and then position machine gun to cover primary sector of fire.
5. Use soil to fill sandbags for walls.

Stage 3
Dig position and build parapets, and then place stringers for the OHC (Figure 7-19):

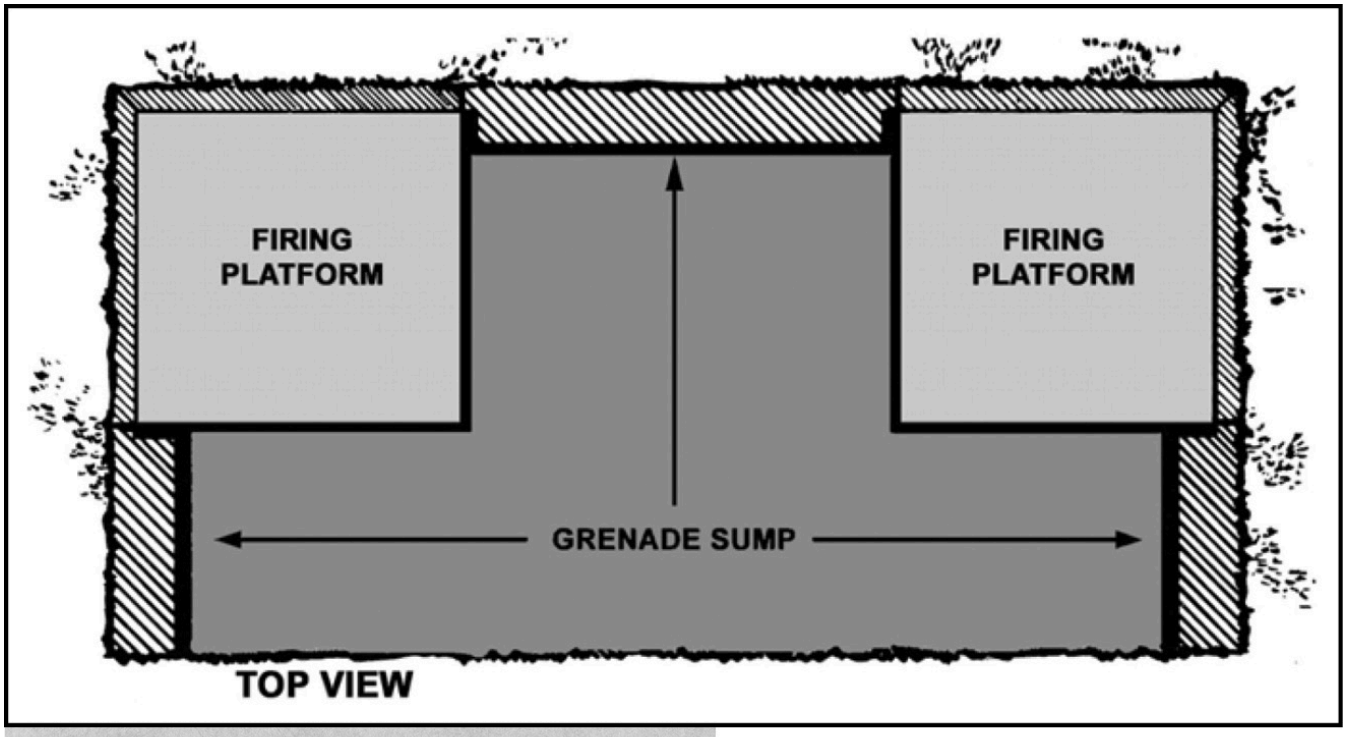


Figure 7-19. Grenade sump locations.

1. Dig the position to a maximum armpit depth around the firing platform.
2. Use soil from hole to fill parapets in order of front, flanks, and rear.

3. Dig grenade sumps and slope floor toward them.
4. Install revetment if needed.
5. Follow same steps as for two-man fighting position.
6. Place stringers for OHC.
7. Follow same steps established for two-man fighting position.
8. Make stringers at least 8 feet (2.44 meters) long.

Stage 4
Install overhead cover (OHC) and camouflage (Figure 7-20):

Figure 7-20. Machine gun fighting position with OHC.

1. For a machine gun position, build the OHC the same as you would for a two-man fighting position.
2. Use surrounding topsoil and camouflage screen systems.
3. Ensure no enemy observation within 115 feet (35 meters) of position.

4. Use soil from hole to fill sandbags and OHC cavity, or to spread around and blend position in with surrounding ground.

CLOSE COMBAT MISSILE FIGHTING POSITIONS

The following paragraphs discuss close combat missile fighting positions for the AT4 and Javelin:

AT4 POSITION

The AT4 is fired from the fighting positions previously described. However, backblast may cause friendly casualties of soldiers in the position's backblast area. You should ensure that any walls, parapets, large trees, or other objects to the rear will not deflect the backblast. When the AT4 is fired from a two-soldier position, you must ensure the backblast area is clear. The front edge of a fighting position is a good elbow rest to help you steady the weapon and gain accuracy. Stability is better if your body is leaning against the position's front or side wall.

STANDARD JAVELIN FIGHTING POSITION WITH OVERHEAD COVER

The standard Javelin fighting position has cover to protect you from direct and indirect fires (Figure 7-21). The position is prepared the same as the two-man fighting position with two additional steps. First, the back wall of the position is extended and sloped rearward, which serves as storage area. Second, the front and side parapets are extended twice the length as the dimensions of the two-man fighting position with the javelin's primary and secondary seated firing platforms added to both sides.

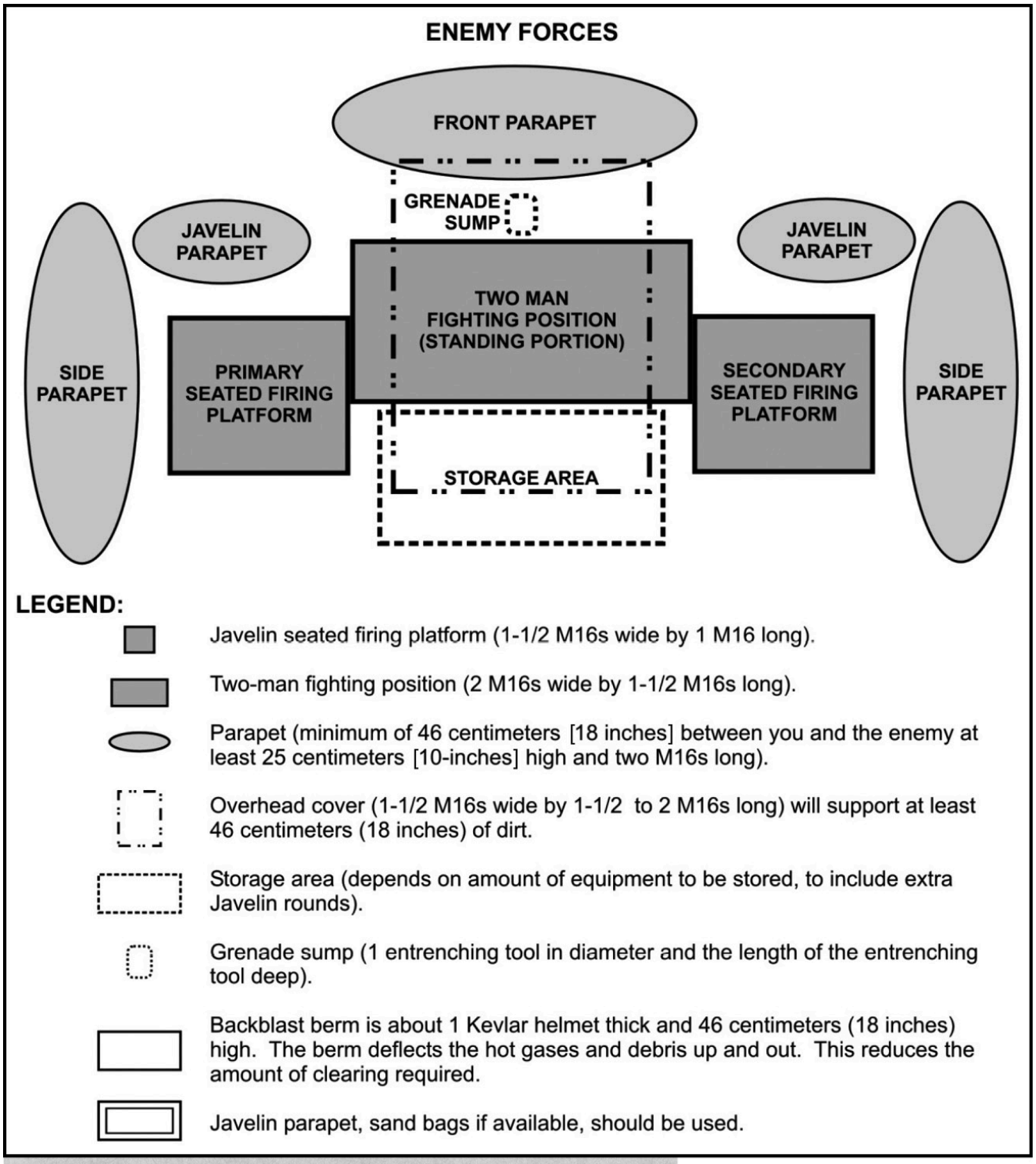


Figure 7-21. Standard Javelin fighting position.

Note: When a Javelin is fired, the muzzle end extends 6 inches (15 centimeters) beyond the front of the position, and the rear launcher extends out over the rear of the position. As the missile leaves the launcher, stabilizing fins unfold. You must keep the weapon at least 6

inches (15 centimeters) above the ground when firing to leave room for the fins. OHC that would allow firing from beneath it is usually built if the backblast area is clear.

RANGE CARDS

A range card, a rough plan of the terrain around a weapon position, is a sketch of the assigned sector that a direct-fire weapon system is intended to cover. Range cards are prepared immediately upon arrival in a position, regardless of the length of stay, and updated as necessary. Two copies of the range card are prepared. One copy stays at your position and the other is sent to the platoon headquarters.

COMPONENTS

A range card is comprised of the following.

Sectors of Fire—A sector of fire is an area to be covered by fire that is assigned to an individual, a weapon, or a unit. You are normally assigned a primary and secondary sector of fire. Fire into your secondary sector of fire only if your primary sector has no targets, or if ordered to do so. Your gun's primary sector includes a FPL and a PDF.

Principal Direction of Fire —A PDF is a direction of fire assigned priority to cover an area that has good fields of fire or has a likely dismounted avenue of approach. The gun is positioned to fire directly down this approach rather than across the platoon's front. It also provides mutual support to an adjacent unit. Machine guns are sighted using the PDF if an FPL has not been assigned. If a PDF is assigned and other targets are not being engaged, machine guns remain on the PDF.

Final Protective Line—An FPL is a predetermined line along which grazing fire is placed to stop an enemy assault. Where terrain allows, your leader assigns an FPL to your weapon. An FPL becomes the machine gun's part of the unit's final protective fires. The FPL will be assigned to you only if your leader determines there is a good distance of grazing fire. If there is, the FPL will then dictate the location of the primary sector. The FPL will become the primary sector limit (right or left) closest to friendly troops. When not firing at other targets, you will lay your gun on the FPL or PDF.

Dead Space—Dead space is an area that direct-fire weapons cannot hit. The area behind houses and hills, within orchards or defilades for example, is dead space. The extent of grazing fire and dead space may be determined in two ways. In the preferred method, the machine gun is adjusted for elevation and direction. Your assistant gunner walks along the FPL while you aim through the sights. In places where his waist (midsection) falls below your point of aim, dead space exists. Arm-and-hand signals must be used to control the soldier who is walking and to obtain an accurate account of the dead space and its location. Another method is to observe the flight of tracer ammunition from a position behind and to the flank of the weapon.

AUTOMATIC WEAPON RANGE CARD

To prepare this range card—

1. Orient the card so both the primary and secondary sectors of fire (if assigned) can fit on it.
2. Draw a rough sketch of the terrain to the front of your position. Include any prominent natural and man-made features that could be likely targets.

3. Draw your position at the bottom of the sketch. Do not put in the weapon symbol at this time.
4. Fill in the marginal data to include—
    a. Gun number (or squad).
    b. Unit (only platoon and company) and date.
    c. Magnetic north arrow.
5. Use the lensatic compass to determine magnetic north, and sketch in the magnetic north arrow on the card with its base starting at the top of the marginal data section.
6. Determine the location of your gun position in relation to a prominent terrain feature, such as a hilltop, road junction, or building. If no feature exists, place the eight-digit map coordinates of your position near the point where you determined your gun position to be. If there is a prominent terrain feature within 1,094 yards (1,000 meters) of the gun, use that feature. Do not sketch in the gun symbol at this time.
7. Using your compass, determine the azimuth in degrees from the terrain feature to the gun position. (Compute the back azimuth from the gun to the feature by adding or subtracting 180 degrees.)
8. Determine the distance between the gun and the feature by pacing or plotting the distance on a map.
9. Sketch in the terrain feature on the card in the lower left- or right-hand corner (whichever is closest to its actual direction on the ground) and identify it.
10. Connect the sketch of the position and the terrain feature with a barbed line from the feature to the gun.
11. Write in the distance in meters (above the barbed line).
12. Write in the azimuth in degrees from the feature to the gun (below the barbed line).

Final Protective Line

To add an FPL to your range card (Figure 7-22):

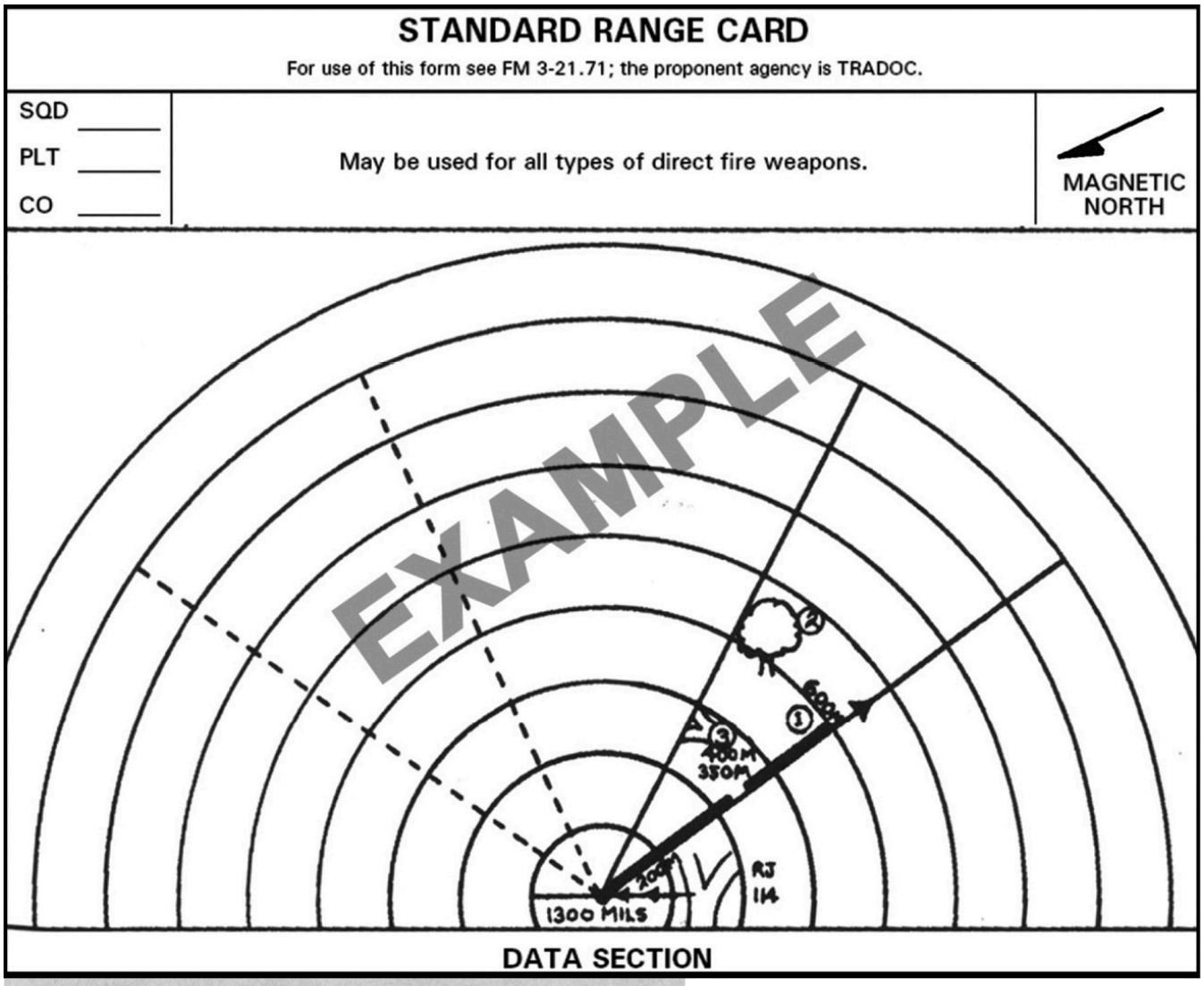


Figure 7-22. Primary sector with an FPL.

1. Sketch in the limits of the primary sector of fire as assigned by your leader.
2. Sketch in the FPL on your sector limit as assigned.
3. Determine dead space on the FPL by having your assistant gunner (AG) walk the FPL. Watch him walk down the line and mark spaces that cannot be grazed.
4. Sketch dead space by showing a break in the symbol for an FPL, and write in the range to the beginning and end of the dead space.
5. Label all targets in your primary sector in order of priority. The FPL is number one.

Primary Direction of Fire

To prepare your range card when assigned a PDF instead of an FPL (Figure 7-23):

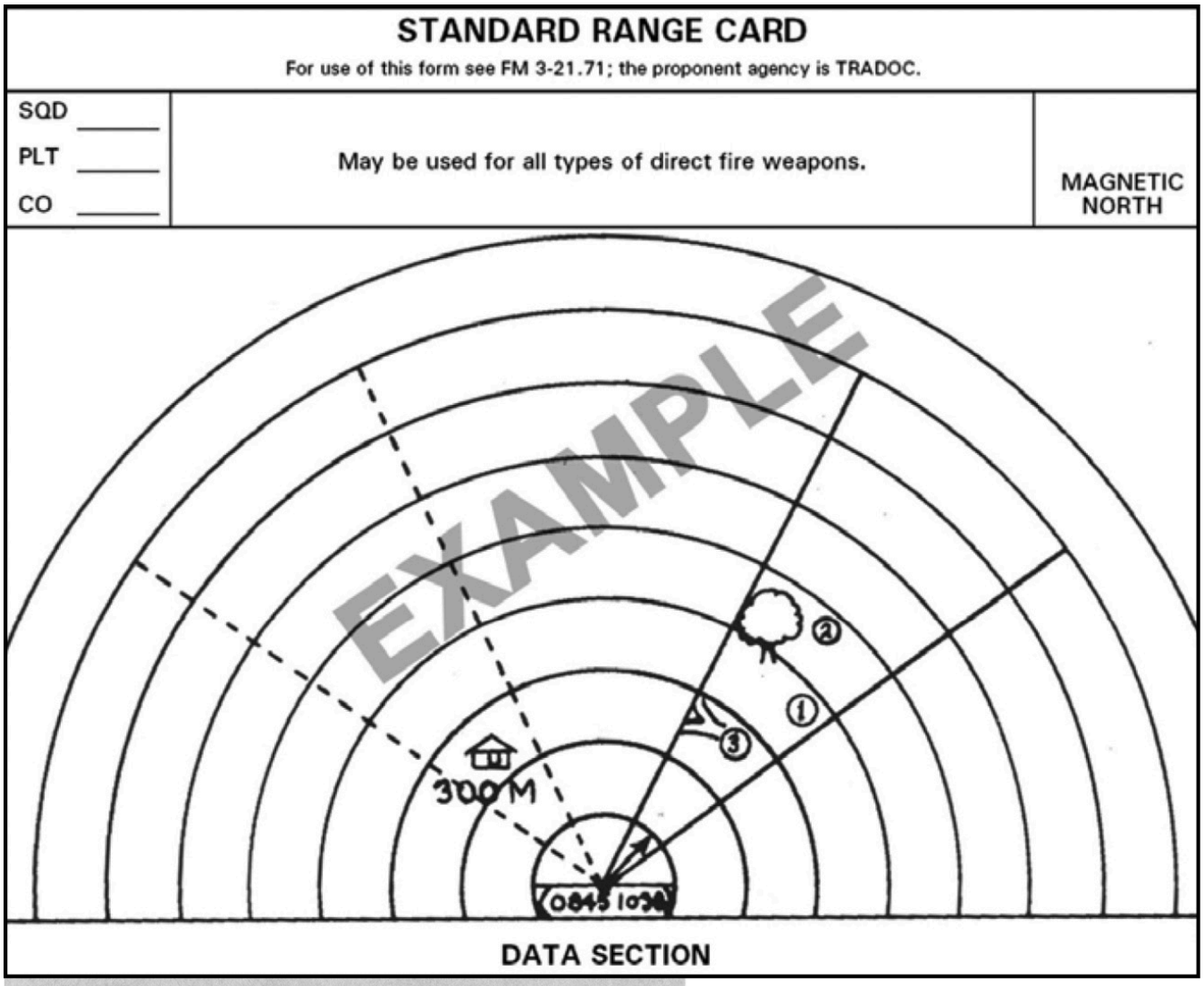


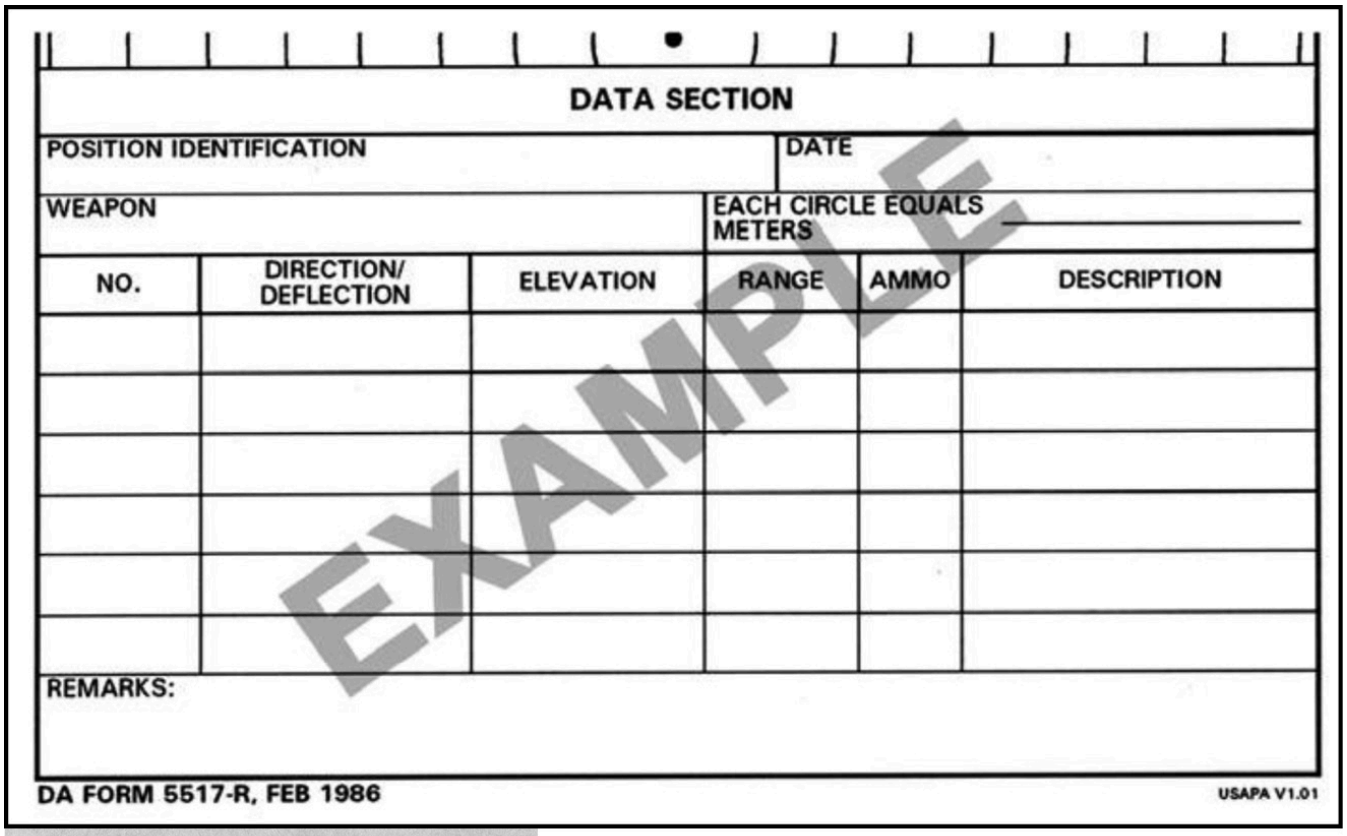
Figure 7-23. Complete sketch with PDF.

1. Sketch in the limits of the primary sector of fire as assigned by your leader (sector should not exceed 875 mils, the maximum traverse of the tripod-mounted machine gun).
2. Sketch in the symbol for an automatic weapon oriented on the most dangerous target within your sector (as designated by your leader). The PDF will be target number one in your sector. All other targets will be numbered in priority.
3. Sketch in your secondary sector of fire (as assigned) and label targets within the secondary sector with the range in meters from your gun to each target. Use the bipod when it is necessary to fire into your secondary sector. The secondary sector is drawn using a broken line. Sketch in aiming stakes, if used.

Data Section

The data section (Figure 7-24) of the range card lists the data necessary to engage targets identified in the sketch. The sketch does not have to be to scale, but the data must be

accurate. The data section of the card can be placed on the reverse side or below the sketch if there is room. (Figure 7-25 shows an example completed data section.) Draw a data section block (if you do not have a printed card) with the following items:



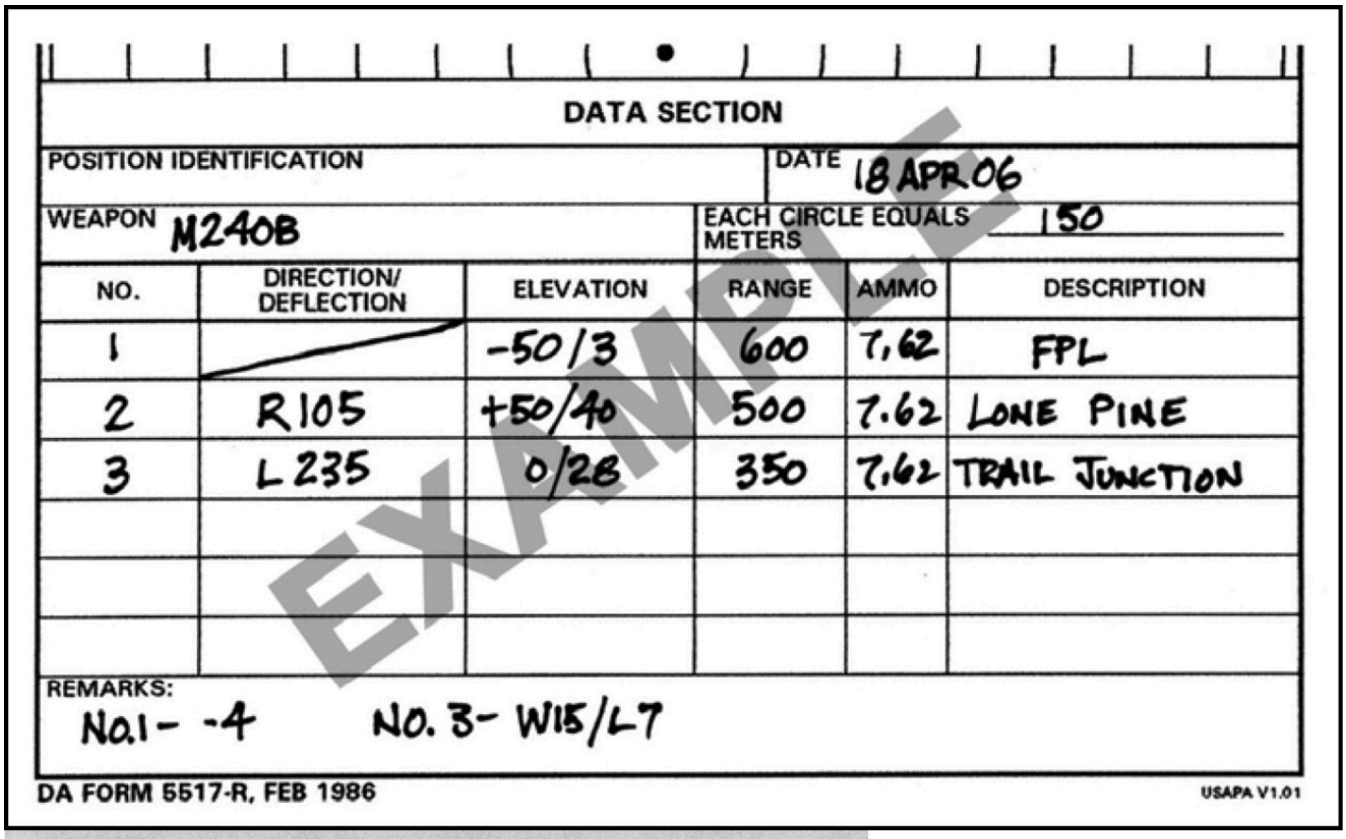
DATA SECTION

POSITION IDENTIFICATION			DATE		
WEAPON			EACH CIRCLE EQUALS _____ METERS		
NO.	DIRECTION/ DEFLECTION	ELEVATION	RANGE	AMMO	DESCRIPTION
REMARKS:					

DA FORM 5517-R, FEB 1986 USAPA V1.01

EXAMPLE

Figure 7-24. Data section.



DATA SECTION

POSITION IDENTIFICATION			DATE 18 APR 06		
WEAPON M240B			EACH CIRCLE EQUALS METERS 150		
NO.	DIRECTION/ DEFLECTION	ELEVATION	RANGE	AMMO	DESCRIPTION
1		-50/3	600	7.62	FPL
2	R105	+50/40	500	7.62	LONE PINE
3	L235	0/28	350	7.62	TRAIL JUNCTION

REMARKS:
NO.1 - -4 NO. 3 - W15/L7

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EXAMPLE

Figure 7-25. Example completed data section.

Prepare

1. Center the traversing hand wheel.
2. Lay the gun for direction.
3. When assigned an FPL, lock the traversing slide on the extreme left or right of the bar, depending on which side of your primary sector the FPL is on.
4. Align the barrel on the FPL by moving the tripod legs. Do not enter a direction in the data section for the FPL.
5. When assigned a PDF, align your gun on the primary sector by traversing the slide to one side and then move the tripod to align the barrel on your sector limit. Align the PDF by traversing the slide until your gun is aimed at the center of the target.
6. Fix the tripod legs in place by digging in or sandbagging them. Once you emplace the tripod to fire into the primary sector, leave it there—do not move it.

Read Direction to Target

1. Lay your gun on the center of the target.
2. Read the direction directly off the traversing bar at the left edge of the traversing bar slide.
3. Enter the reading under the direction column of your range card data section.

4. Determine the left or right reading based on the direction of the barrel, just the opposite of the slide.
5. Lay your gun on the base of the target by rotating the elevating handwheel.
6. Read the number, including a plus or minus sign, except for "0" above the first visible line on the elevating scale. The sketch reads "–50."
7. Read the number on the elevating handwheel that is in line with the indicator. The sketch reads "3."
8. Enter this reading under the ELEVATION column of your range card data section. Separate the two numbers with a solidus, also known as a slash ("/"). Always enter the reading from the upper elevating bar first. The sketch reads "–50/3."
9. Enter the range to each target under the appropriate column in the data section.
10. Enter your ammunition type under the appropriate column in the data section.
11. Describe each target under the appropriate column in the data section.

Complete Remarks Section

1. Enter the width and depth of linear targets in mils. The "-4" means that if you depress the barrel 4 mils, the strike of the rounds will go down to ground level along the FPL.
2. When entering the width of the target, be sure to give the width in mils, and express it as two values. For example, the illustration shows that target number three has a width of 15 mils. The second value, L7, means that once the gun is laid on your target, traversing 7 mils to the LEFT will lay the gun on the left edge of the target.
3. Enter aiming stake if one is used for the target.
4. No data for the secondary sector will be determined since your gun will be fired in the bipod role.

CLOSE COMBAT MISSILE RANGE CARD

The purpose of this card is to show a sketch of the terrain a weapon has been assigned to cover by fire. By using a range card, you can quickly and accurately determine the information needed to engage targets in your assigned sector (Figure 7-26 for a completed range card). Before you prepare a range card, your leader will show you where to position your weapon so you can best cover your assigned sector of fire. He will then, again, point out the terrain you are to cover. He will do this by assigning you a sector of fire or by assigning left or right limits indicated by either terrain features or azimuths. If necessary, he may also assign you more than one sector of fire and will designate the sectors as primary and secondary.

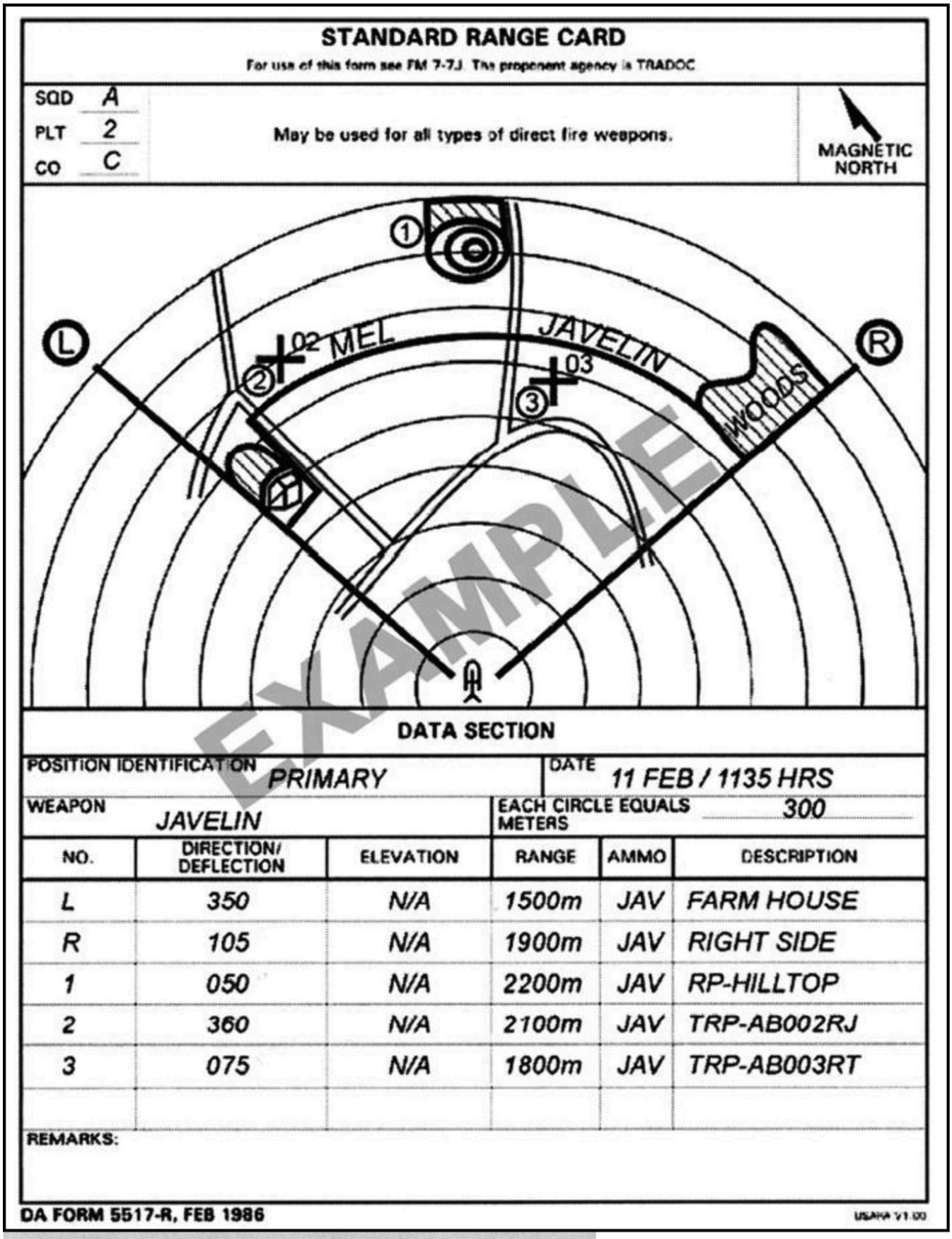


Figure 7-26. Example completed range card.

Target Reference Points (TRPs)

TRPs are natural or man-made features within your sector that you can use to quickly locate targets (Figure 7-27). TRPs are used mainly to control direct-fire weapons. However, TRPs should appear on the company target list.

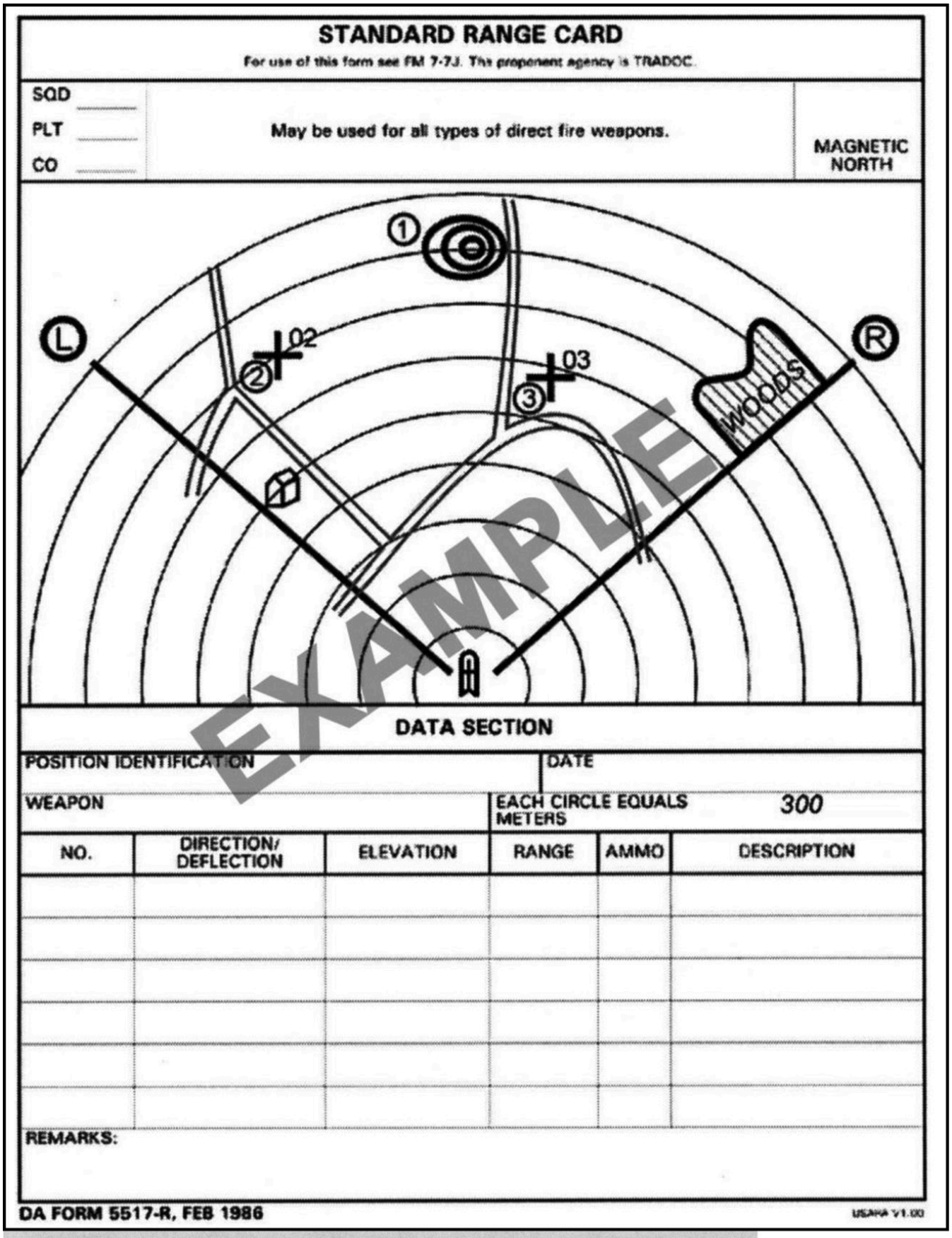


Figure 7-27. Reference points and target reference points.

Maximum Engagement Line
The maximum engagement line (MEL) is a line beyond which you cannot engage a target. This line may be closer than the maximum engagement range of your weapon. Both the terrain and the maximum engagement range of your weapon will determine the path of the MEL.

Preparation
Draw the weapon symbol in the center of the small circle.

Sector Limits
Draw two lines from the position of the weapons system extending left and right to show the limits of the sector. The area between the left and right limits depicts your sector of fire or area of responsibility. Number the left limit as No. 1, number the right limit No. 2, and place a circle around each number. Record the azimuth and distance of each limit in the data section. Determine the value of each circle by finding a terrain feature farthest from the position and within the weapon system's capability. Determine the distance to the terrain feature. Round off the distance to the next even hundredth, if necessary. Determine the maximum number of circles that will divide evenly into the distance. The result is the value of each circle. Draw the terrain feature on the appropriate circle on the range card. Clearly mark the increment for each circle across the area where DATA SECTION is written. For example, suppose you use a hilltop at 2,565 yards (2,345 meters). Round the distance to 2,625 yards (2,400 meters) and divide by 8. The result is 300, so now each circle has a value of 300 meters.

Reference Points
Draw all reference points (RP) and TRPs in the sector. Mark each with a circled number beginning with one. Draw hilltop as RP1, a road junction as RP2, and road junction as RP3. Sometimes, a TRP and RP are the same point, such as in the previous example. When this happens, mark the TRP with the first designated number in the upper-right quadrant, and mark the RP in the lower-left quadrant of the cross. This occurs when a TRP is used for target acquisition and range determination.

Road Junction—For a road junction, first determine the range to the junction, then draw the junction, and then draw the connecting roads from the road junction.

Dead Space—Show dead space as an irregular circle with diagonal lines inside. Any object that prohibits observation or coverage with direct fire will have the circle and diagonal lines extend out to the farthest MEL. If you can engage the area beyond the dead space, then close the circle.

Maximum Engagement Line
Draw the MEL at the maximum effective engagement range for the weapon, but draw it around (inside) the near edge of any dead spaces (Figure 7-28). Do not draw the MEL through dead spaces.

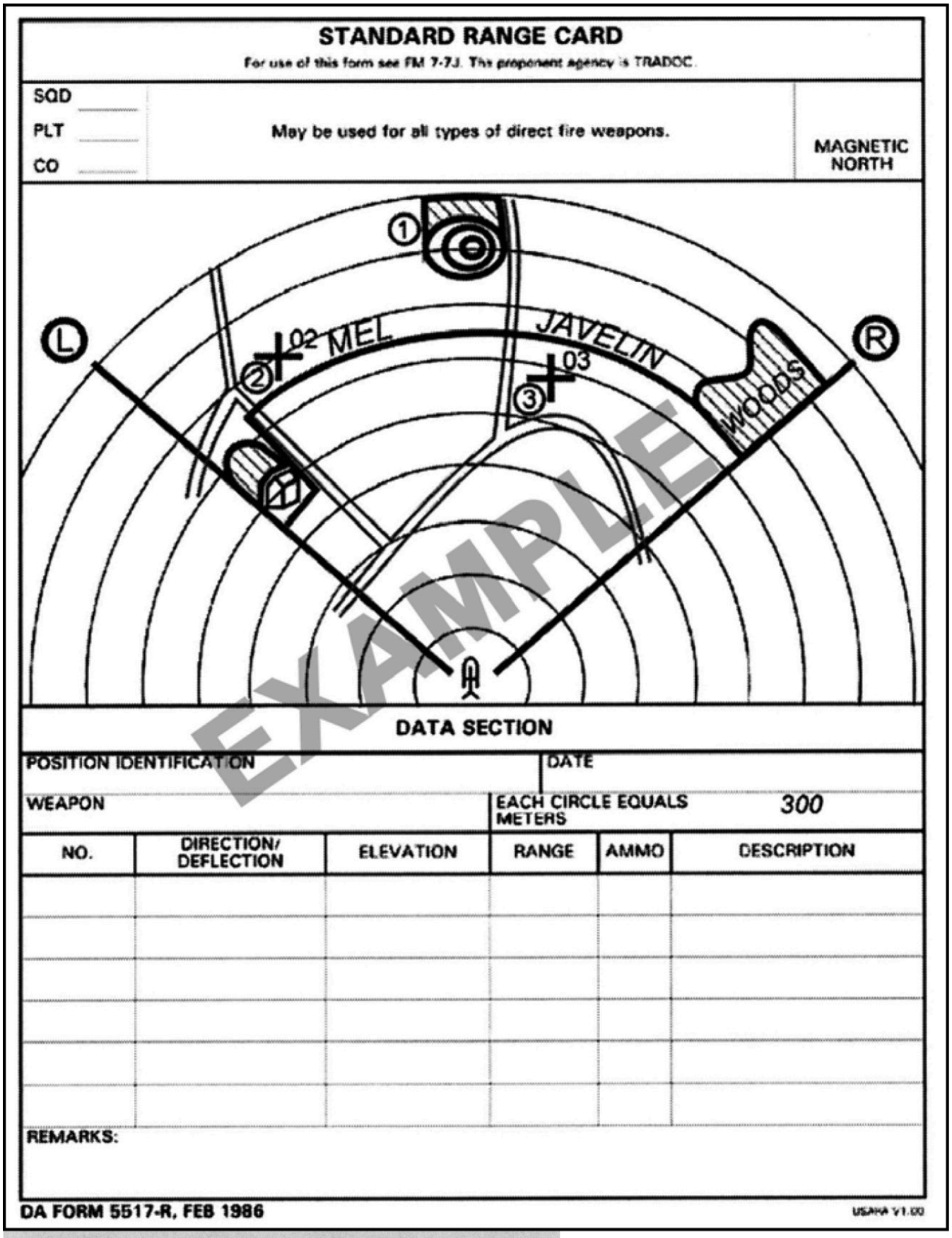


Figure 7-28. Maximum engagement lines.

Weapon Reference Point (WRP)
Show the WRP as a line with a series of arrows, extending from a known terrain feature, and pointing in the direction of the weapon system symbol (Figure 7-29). Number this feature last. The WRP location is given a six-digit grid. When there is no terrain feature to be designated as the WRP, show the weapon's location as an eight-digit grid coordinate in the Remarks block of the range card. Complete the data section as follows:

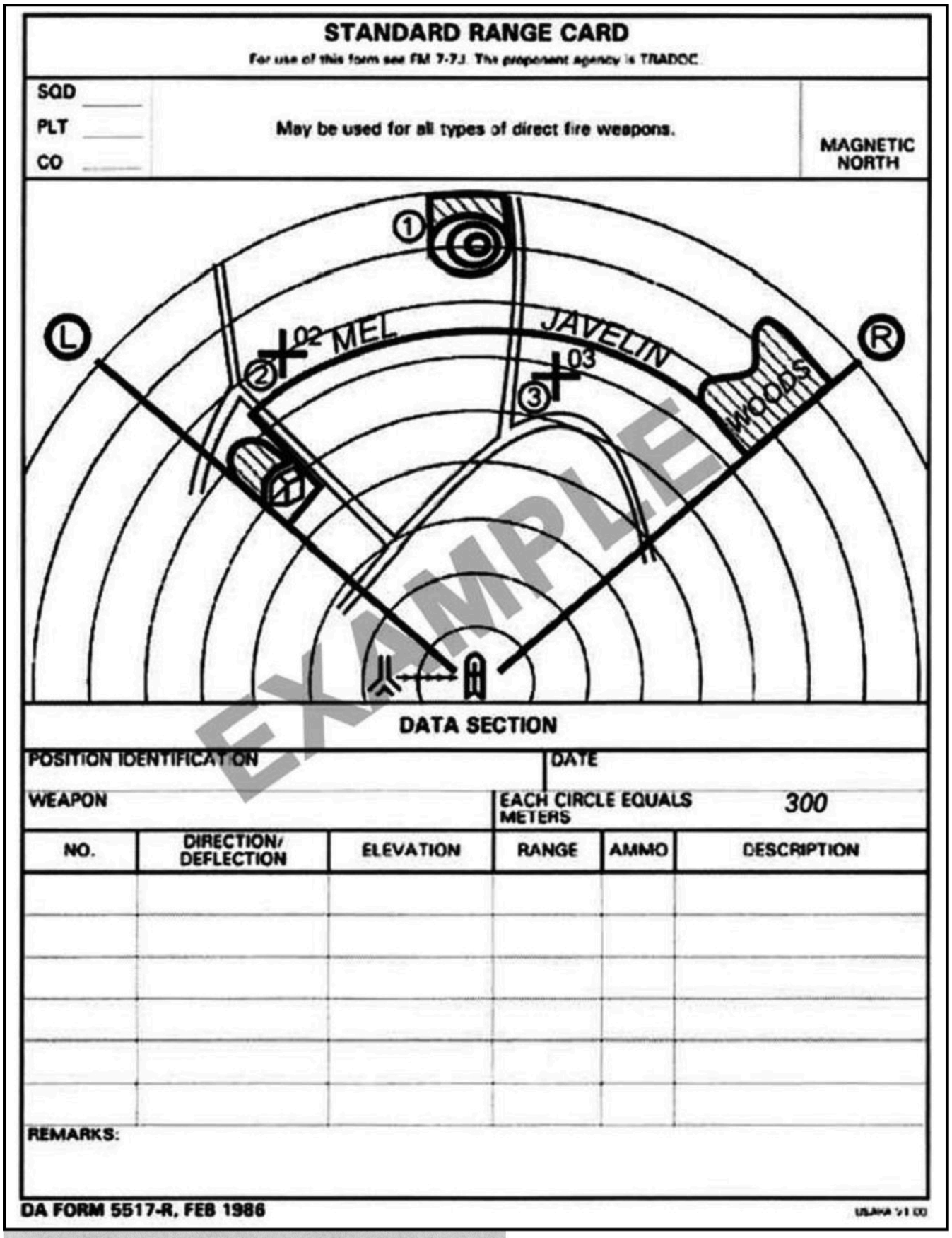


Figure 7-29. Weapon reference point.

Position Identification—List primary, alternate, or supplementary positions. Alternate and supplemental positions must be clearly identified.

Date—Show date and time the range card was completed. Range cards, like fighting positions, are constantly updated. The date and time are vital in determining current data.

Weapon—The weapon block indicates weapon type.

Each Circle Equals Meters—Write in the distance, in meters, between circles.

NO (Number)—Start with L and R limits, then list TRPs and RPs in numerical order.

Direction/Deflection—The direction is listed in degrees. The deflection is listed in mils.

Elevation—The elevation is listed in mils.

Range—This is the distance, in meters, from weapon system position to L and R limits and TRPs and RPs.

Ammunition—List types of ammunition used.

Description—List the name of the object (for example, farmhouse, wood line, or hilltop).

Remarks—Enter the WRP data. As a minimum, WRP data describes the WRP and gives its six-digit or eight-digit grid coordinate, magnetic azimuth, and distance to the position. Complete the marginal information at the top of the card.

Unit Description—Enter unit description such as squad, platoon, or company. Never indicate a unit higher than company.

Magnetic North—Orient the range card with the terrain, and draw the direction of the magnetic North arrow.

CHAPTER 8
MOVEMENT

Normally, you will spend more time moving than fighting. The fundamentals of movement discussed in this chapter provide techniques that all soldiers must learn. Even seasoned troops should practice these techniques regularly, until they become second nature.

INDIVIDUAL MOVEMENT TECHNIQUES

Your leaders base their selection of a particular movement technique by traveling, traveling overwatch, or bounding overwatch on the likelihood of enemy contact and the requirement for speed. However, your unit's ability to move depends on your movement skills and those of your fellow soldiers. Use the following techniques to avoid being seen or heard:

- Stop, look, listen, and smell (SLLS) before moving. Look for your next position before leaving a position.
- Look for covered and concealed routes on which to move.
- Change direction slightly from time to time when moving through tall grass.
- Stop, look, and listen when birds or animals are alarmed (the enemy may be nearby).
- Smell for odors such as petroleum, smoke, and food; they are additional signs of the enemy's presence.
- Cross roads and trails at places that have the most cover and concealment (large culverts, low spots, curves, or bridges).
- Avoid steep slopes and places with loose dirt or stones.
- Avoid cleared, open areas and tops of hills and ridges. Walking at the top of a hill or ridge will skyline you against the sun or moon, enabling the enemy to see you.

INDIVIDUAL MOVEMENT TECHNIQUES

In addition to walking, you may move in one of three other methods known as individual movement techniques (IMT)—low crawl, high crawl, or rush.

Low Crawl

The low crawl gives you the lowest silhouette. Use it to cross places where the cover and/or concealment are very low and enemy fire or observation prevents you from getting up. Keep your body flat against the ground. With your firing hand, grasp your weapon sling at the upper sling swivel. Let the front hand guard rest on your forearm (keeping the muzzle off the ground), and let the weapon butt drag on the ground. To move, push your arms forward and pull your firing-side leg forward. Then pull with your arms and push with your leg. Continue this throughout the move (Figure 8-1).

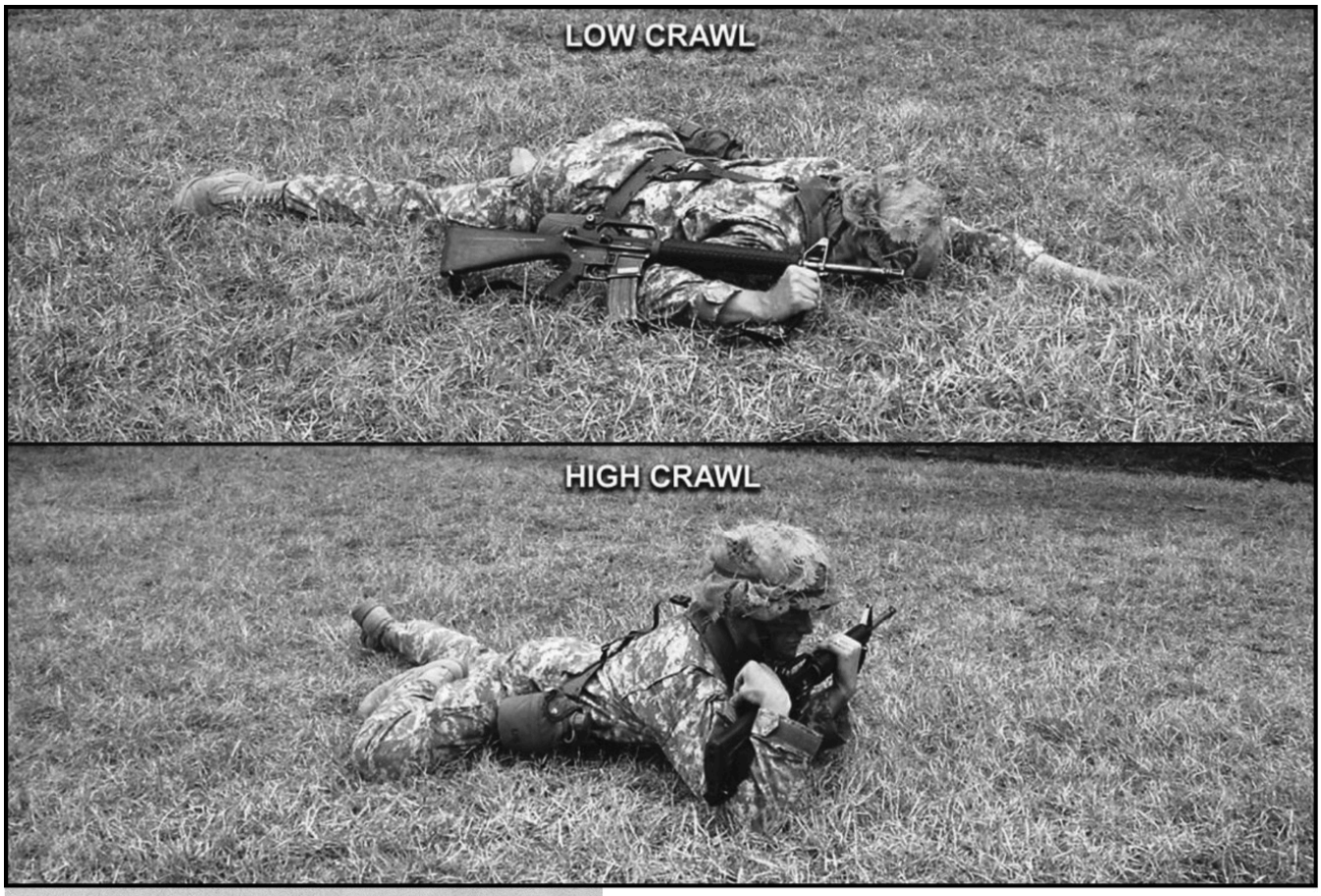


Figure 8-1. Low and high crawl.

High Crawl

The high crawl lets you move faster than the low crawl and still gives you a low silhouette. Use this crawl when there is good cover and concealment but enemy fire prevents you from getting up. Keep your body off the ground and resting on your forearms and lower legs. Cradle your weapon in your arms and keep its muzzle off the ground. Keep your knees well behind your buttocks so your body will stay low. To move, alternately advance your right elbow and left knee, then your left elbow and right knee (Figure 8-1).

When you are ready to stop moving:

- Plant both of your feet.
- Drop to your knees (at the same time slide a hand to the butt of your rifle).
- Fall forward, breaking the fall with the butt of the rifle.
- Go to a prone firing position.

If you have been firing from one position for some time, the enemy may have spotted you and may be waiting for you to come up from behind cover. So, before rushing forward, roll or crawl a short distance from your position. By coming up from another spot, you may fool an enemy who is aiming at one spot and waiting for you to rise. When the route to your next

position is through an open area, use the three- to five-second rush. When necessary, hit the ground, roll right or left, and then rush again.

Rush

The rush is the fastest way to move from one position to another (Figure 8-2). Each rush should last from three to five seconds. Rushes are kept short to prevent enemy machine gunners or riflemen from tracking you. However, do not stop and hit the ground in the open just because five seconds have passed. Always try to hit the ground behind some cover. Before moving, pick out your next covered and concealed position and the best route to it. Make your move from the prone position as follows:

Figure 8-2. Rush.

- Slowly raise your head and pick your next position and the route to it.
- Slowly lower your head.
- Draw your arms into your body (keeping your elbows in).
- Pull your right leg forward.
- Raise your body by straightening your arms.
- Get up quickly.
- Rush to the next position.

Movement with Stealth
Moving with stealth means moving quietly, slowly, and carefully. This requires great patience. To move with stealth, use the following techniques:

- Ensure your footing is sure and solid by keeping your body's weight on the foot on the ground while stepping.
- Raise the moving leg high to clear brush or grass.
- Gently let the moving foot down toe first, with your body's weight on the rear leg.
- Lower the heel of the moving foot after the toe is in a solid place.
- Shift your body's weight and balance the forward foot before moving the rear foot.
- Take short steps to help maintain balance.

At night, and when moving through dense vegetation, avoid making noise. Hold your weapon with one hand and keep the other hand forward, feeling for obstructions. When going into a prone position, use the following techniques:

- Hold your rifle with one hand and crouch slowly.
- Feel for the ground with your free hand to make sure it is clear of mines, trip wires, and other hazards.
- Lower your knees, one at a time, until your body's weight is on both knees and your free hand.
- Shift your weight to your free hand and opposite knee.
- Raise your free leg up and back, and lower it gently to that side.
- Move the other leg into position the same way.
- Roll quietly into a prone position.

Use the following techniques when crawling:

- Crawl on your hands and knees.
- Hold your rifle in your firing hand.
- Use your nonfiring hand to feel for and make clear spots for your hands and knees.
- Move your hands and knees to those spots, and put them down softly.

MOVEMENT WITHIN A TEAM

Movement formations are used for control, security, and flexibility. These formations are the actual arrangements for you and your fellow soldiers in relation to each other.

Control
Every squad and soldier has a standard position. You must be able to see your fire team leader. Fire team leaders must be able to see their squad leaders. Leaders control their units using arm-and-hand signals.

Security
Formations also provide 360-degree security and allow the weight of their firepower to the flanks or front in anticipation of enemy contact.

Flexibility

Formations do not demand parade-ground precision. Your leaders must retain the flexibility needed to vary their formations to the situation. The use of formations allows you to execute battle drills more quickly and gives the assurance that your leaders and buddy team members are in their expected positions and performing the right tasks. You will usually move as a member of a squad/team. Small teams, such as Infantry fire teams, normally move in a wedge formation. Each soldier in the team has a set position in the wedge, determined by the type of weapon he carries. That position, however, may be changed by the team leader to meet the situation. The normal distance between soldiers is ten meters. When enemy contact is possible, the distance between teams should be about fifty meters. In very open terrain such as the desert, the interval may increase. The distance between individuals and teams is determined by how much command and control the squad leader can still exercise over his teams and the team members (Figure 8-3).

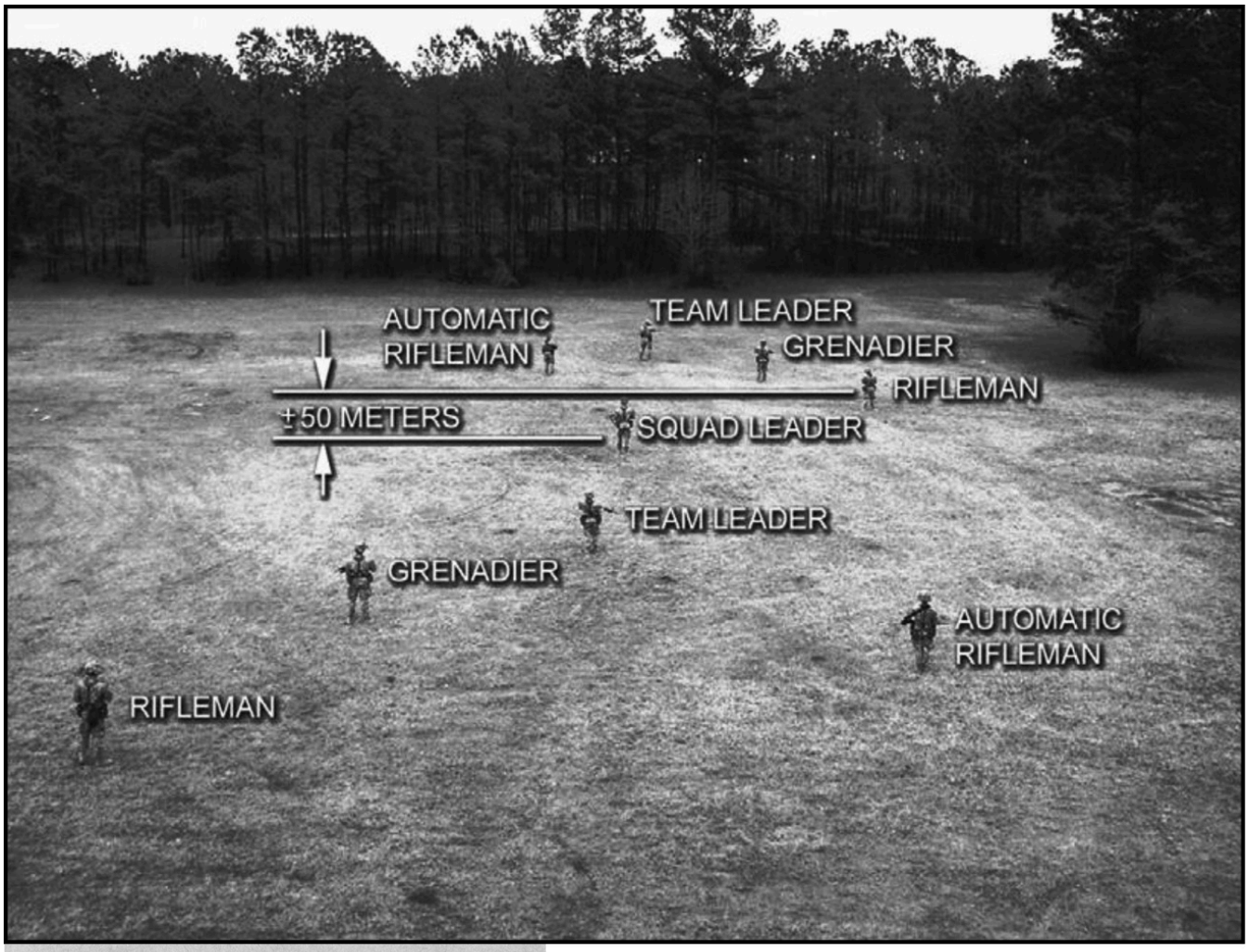


Figure 8-3. Fire team wedge.

You may have to make a temporary change in the wedge formation when moving through close terrain. The soldiers in the sides of the wedge close into a single file when moving in thick brush or through a narrow pass. After passing through such an area, they should spread out, forming the wedge again. You should not wait for orders to change the formation or the interval. You should change automatically and stay in visual contact with the other team members and the team leader. The team leader leads by setting the example. His standing order is, FOLLOW ME AND DO AS I DO. When he moves to the left, you should move to the left. When he gets down, you should get down. When visibility is limited, control during movement may become difficult. To aid control, for example, the helmet camouflage band has two, one-inch horizontal strips of luminous tape sewn on it. Unit standard operating procedures (SOPs) normally address the configuration of the luminous strips.

IMMEDIATE ACTIONS WHILE MOVING

This section furnishes guidance for the immediate actions you should take when reacting to enemy indirect fire and flares. These warrior drills are actions every soldier and small unit should train for proficiency.

REACTING TO INDIRECT FIRE

If you come under indirect fire while moving, immediately seek cover and follow the commands and actions of your leader. He will tell you to run out of the impact area in a certain direction or will tell you to follow him (Figure 8-4). If you cannot see your leader but can see other team members, follow them. If alone, or if you cannot see your leader or the other team members, run out of the area in a direction away from the incoming fire.

Figure 8-4. Following of team leader from impact area.

It is hard to move quickly on rough terrain, but the terrain may provide good cover. In such terrain, it may be best to take cover and wait for the fires to cease. After they stop, move out of the area quickly.

REACTING TO GROUND FLARES

The enemy puts out ground flares as warning devices. He sets them off himself or attaches trip wires to them for you to trip on and set off. He usually puts the flares in places he can watch (Figure 8-5).

Figure 8-5. Reaction to ground flares.

If you are caught in the light of a ground flare, flip up your night vision device (NVD) and move quickly out of the lighted area. The enemy will know where the ground flare is and will be ready to fire into that area. Move well away from the lighted area. While moving out of the area, look for other team members. Try to follow or join them to keep the team together.

REACTING TO AERIAL FLARES

The enemy uses aerial flares to light up vital areas. They can be set off like ground flares; fired from hand projectors, grenade launchers, mortars, and artillery; or dropped from aircraft. If you hear the firing of an aerial flare while you are moving, flip up your NVD and hit the ground (behind cover if possible) while the flare is rising and before it bursts and illuminates.

If moving where it is easy to blend with the background, such as in a forest, and you are caught in the light of an aerial flare, freeze in place until the flare burns out.

If you are caught in the light of an aerial flare while moving in an open area, immediately crouch low or lie down. If you are crossing an obstacle, such as a barbed-wire fence or a wall, and are caught in the light of an aerial flare, crouch low and stay down until the flare burns out. The sudden light of a bursting flare may temporarily wash out your NVD, blinding both you and the enemy. When the enemy uses a flare to spot you, he spoils his own night vision. To protect your night vision, flip up your NVD and close one eye while the flare is burning. When the flare burns out, the eye that was closed will still have its night vision and you can place your NVD back into operation (Figure 8-6).

Figure 8-6. Reaction to aerial flares.

When a unit makes contact with the enemy, it normally starts firing at and moving toward the enemy. Sometimes the unit may move away from the enemy. This technique is called fire and movement—one element maneuvers (or moves) while another provides a base of fire. It is conducted to both close with and destroy the enemy, or to move away from the enemy to break contact with him.

The firing and moving takes place at the same time. There is a fire element and a movement element. These elements may be buddy teams, fire teams, or squads. Regardless of the size of the elements, the action is still fire and movement.

- The fire element covers firing at and suppressing the enemy. This helps keep the enemy from firing back at the movement element.
- The movement element moves either to close with the enemy or to reach a better position from which to fire at him. The movement element should not move until the fire element is firing.

Depending on the distance to the enemy position and on the available cover, the fire element and the movement element switch roles as needed to keep moving. Before the movement element moves beyond the supporting range of the fire element (the distance in which the weapons of the fire element can fire and support the movement element), it should take a position from which it can fire at the enemy. The movement element then becomes the next fire element and the fire element becomes the next movement element. If your team makes contact, your team leader should tell you to fire or to move. He should also tell you where to fire from, what to fire at, or where to move. When moving, use the low crawl, high crawl, or rush IMTs.

MOVEMENT ON VEHICLES

Soldiers can ride on the outside of armored vehicles; however, this is not done routinely. Therefore, as long as tanks and Infantry are moving in the same direction and contact is not likely, soldiers may ride on tanks.

GUIDELINES FOR RIDING ON ALL ARMORED VEHICLES

The following must be considered before soldiers mount or ride on an armored vehicle.

- When mounting an armored vehicle, soldiers must always approach the vehicle from the front to get permission from the vehicle commander to mount. They then mount the side of the vehicle away from the coaxial machine gun and in view of the driver. Maintain three points of contact and use only fixed objects as footholds and handholds; do not use the gun or optic system.
- If the vehicle has a stabilization system, the squad leader obtains verification from the vehicle commander that it is OFF before the vehicle starts to move.
- The Infantry must dismount as soon as possible when tanks come under fire or when targets appear that require the tank gunner to traverse the turret quickly to fire.
- All soldiers must be alert for obstacles that can cause the tank to turn suddenly and for trees that can knock riders off the tank.

GUIDELINES FOR RIDING ON SPECIFIC ARMORED VEHICLES

The following information applies to specific vehicles.

- The Ml tank is not designed to carry riders easily. Riders must NOT move to the rear deck. Engine operating temperatures make this area unsafe for riders (Figure 8-7).

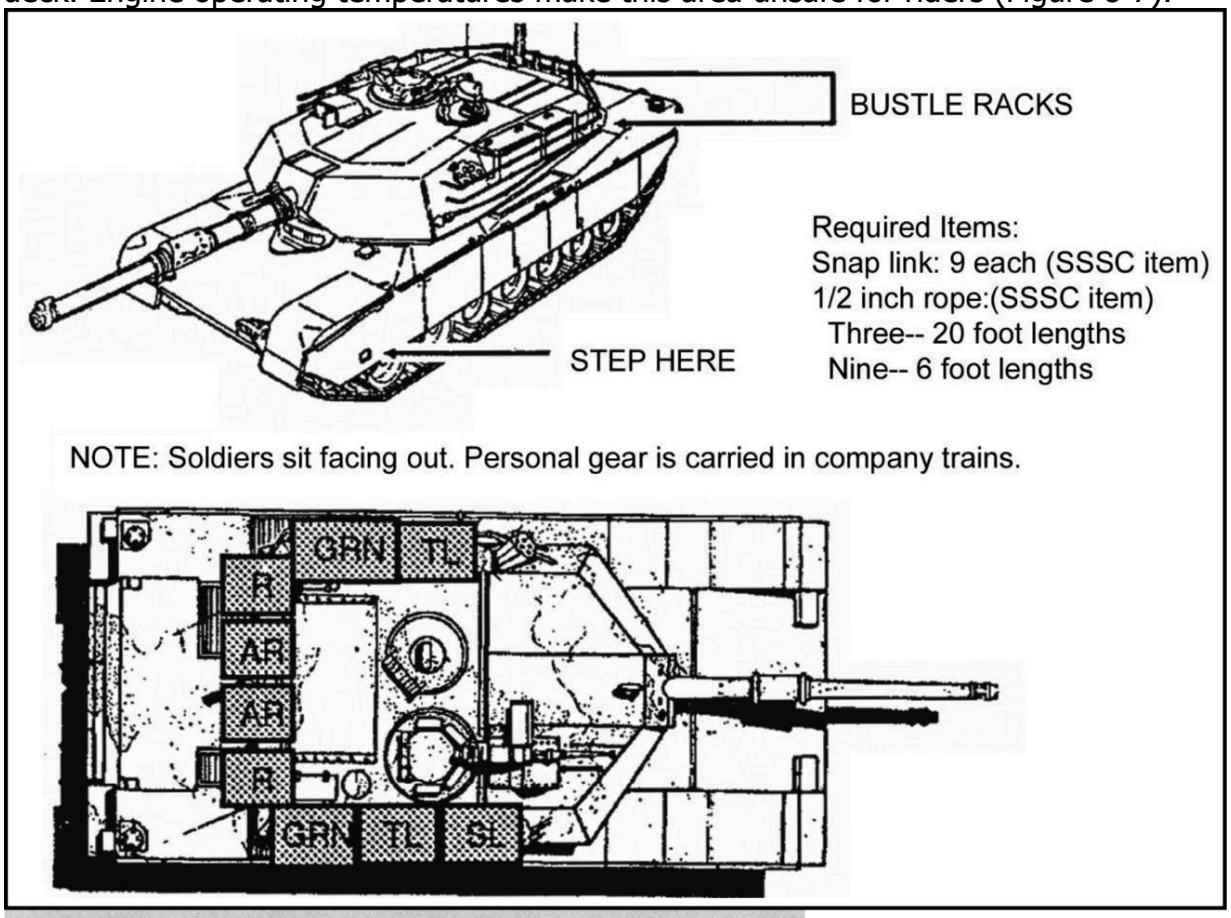


Figure 8-7. Mounting and riding arrangements.

- One Infantry squad can ride on the turret. The soldiers must mount in such a way that their legs cannot become entangled between the turret and the hull by an unexpected turret movement. Rope and equipment straps may be used as a field-expedient Infantry rail to provide secure handholds. Soldiers may use a snap link to assist in securing themselves to the turret.
- Everyone must be to the rear of the smoke grenade launchers. This automatically keeps everyone clear of the coaxial machine gun and laser range finder.
- The Infantry must always be prepared for sudden turret movement.
- Leaders should caution soldiers about sitting on the turret blowout panels, because 250 pounds of pressure will prevent the panels from working properly. If there is an explosion in the ammunition rack, these panels blow outward to lessen the blast effect in the crew compartment.
- If enemy contact is made, the tank should stop in a covered and concealed position and allow the Infantry time to dismount and move away from the tank. This action needs to be rehearsed before movement.
- The Infantry should not ride with anything more than their battle gear. Excess gear should be transported elsewhere.

CHAPTER 9
URBAN AREAS

The rapid growth of the number and size of urban centers, especially in regions of political instability, increases the likelihood that soldiers will be called upon to conduct operations in urban areas. Keep in mind that the urban battlefield environment is rapidly exhausting, both physically and mentally, and may look even more chaotic than it is. Successful combat operations in urban areas require skills that are unique to this type of fighting. You must be skilled in moving, entering buildings, clearing rooms, and selecting and using fighting positions to be effective while operating in this type of environment.

SECTION I. MOVEMENT TECHNIQUES

Movement in urban areas is the first skill you must master. Movement techniques must be practiced until they become second nature. To reduce exposure to enemy fire, you should avoid open areas, avoid silhouetting yourself, and select your next covered position before movement. The following paragraphs discuss how to move in urban areas:

AVOIDING OPEN AREAS

Open areas, such as streets, alleys, and parks, should be avoided. They are natural kill zones for enemy, crew-served weapons, or snipers. They can be crossed safely if the individual applies certain fundamentals, including using smoke from hand grenades or smoke pots to conceal movement. When employing smoke as an obscurant, keep in mind that thermal sighting systems can see through smoke. Also, when smoke has been thrown in an open area, the enemy may choose to engage with suppressive fires into the smoke cloud.

- Before moving to another position, you should make a visual reconnaissance, select the position offering the best cover and concealment, and determine the route to get to that position.
- You need to develop a plan for movement. You should always select the shortest distance to run between buildings and move along covered and concealed routes to your next position, reducing the time exposed to enemy fire.

MOVING PARALLEL TO BUILDINGS

You may not always be able to use the inside of buildings as routes of advance and must move on the outside of the buildings. Smoke, suppressive fires, and cover and concealment should be used as much as possible to hide movement. You should move parallel to the side of the building, maintaining at least twelve inches of separation between yourself and the wall to avoid rabbit rounds (ricochets and rubbing or bumping the wall). Stay in the shadows,

present a low silhouette, and move rapidly to your next position. If an enemy gunner inside the building fires, he exposes himself to fire from other squad members providing overwatch.

MOVING PAST WINDOWS

Windows present another hazard to the soldier. The most common mistakes are exposing the head in a first-floor window and not being aware of basement windows. When using the correct technique for passing a first-floor window, you must stay below the window level and near the side of the building (Figure 9-1). Ensure you do not silhouette yourself in the window. An enemy gunner inside the building would have to expose himself to covering fires if he tries to engage you.

Figure 9-1. Soldier moving past windows.

The same techniques used in passing first-floor windows are used when passing basement windows. You should not walk or run pass a basement window, as this will present a good

target for an enemy gunner inside the building. Ensure you stay close to the wall of the building and step or jump pass the window without exposing your legs (Figure 9-2).

Figure 9-2. Soldier passing basement windows.

CROSSING A WALL

You must learn the correct method of crossing a wall (Figure 9-3). After you have reconnoitered the other side, quickly roll over the wall and keep a low silhouette. Your speed of movement and low silhouette denies the enemy a good target.

MOVING AROUND CORNERS

The area around a corner must be observed before the soldier moves. The most common mistake you can make at a corner is allowing your weapon to extend beyond the corner, exposing your position; this mistake is known as flagging your weapon. You should show your head below the height an enemy would expect to see it. You must lie flat on the ground and not extend your weapon beyond the corner of the building. Only expose your head (at ground level) enough to permit observation (Figure 9-4). You can also use a mirror, if available, to look around the corner. Another corner-clearing technique that is used when speed is required is the pie-ing method. This procedure is done by aiming the weapon beyond the corner into the direction of travel (without flagging) and side-stepping around the corner in a circular fashion with the muzzle as the pivot point (Figure 9-5).

Figure 9-3. Soldier crossing a wall.

Figure 9-4. Correct technique for looking around a corner.

Figure 9-5. Pie-ing a corner.

MOVING WITHIN A BUILDING

Once you have entered a building (see Section II), follow these procedures to move around in it:

DOORS AND WINDOWS

Avoid silhouetting yourself in doors and windows (Figure 9-6).

Figure 9-6. Movement within a building.

HALLWAYS

When moving in hallways, never move alone—always move with at least one other soldier for security.

WALLS

You should try to stay twelve to eighteen inches away from walls when moving; rubbing against walls may alert an enemy on the other side, or, if engaged by an enemy, ricochet rounds tend to travel parallel to a wall.

SECTION II. OTHER PROCEDURES

This section discusses how to enter a building, clear a room, and use fighting positions.

ENTERING A BUILDING

When entering buildings, exposure time must be minimized. Before moving toward the building, you must select the entry point. When moving to the entry point, use smoke to conceal your advance. You must avoid using windows and doors except as a last resort. Consider the use of demolitions, shoulder-launched munitions (SLMs), close combat missiles (CCMs), tank rounds, and other means to make new entrances. If the situation permits, you should precede your entry with a grenade, enter immediately after the grenade explodes, and be covered by one of your buddies. Entry should be made at the highest level possible.

ENTER UPPER LEVEL

Entering a building from any level other than the ground floor is difficult. However, clearing a building from the top down is best, because assaulting and defending are easier from upper floors. Gravity and the building's floor plan help when soldiers throw hand grenades and move between floors. An enemy forced to the top of a building may be cornered and fight desperately, or escape over the roof. An enemy who is forced down to ground level may withdraw from the building, exposing himself to friendly fires from the outside. Soldiers can use several means, including ladders, drainpipes, vines, helicopters, or the roofs and windows of adjacent buildings, to reach the top floor or roof of a building. One soldier can climb onto the shoulders of another and reach high enough to pull himself up. Ladders are the fastest way to reach upper levels. If portable ladders are unavailable, soldiers can construct them from materials available through supply channels. They can also build ladders using resources available in the urban area. For example, they can use the lumber from inside the walls of buildings. Although ladders do not permit access to the top of some buildings, they do offer security and safety through speed. Soldiers can use ladders to conduct an exterior assault of an upper level, provided exposure to enemy fire can be minimized.

SCALE WALLS

When you must scale a wall during exposure to enemy fire, use all available concealment. Use smoke and other diversions to improve your chance of success. When using smoke for concealment, plan for wind direction. Use suppressive fire, shouting, and distractions from other positions to divert the enemy's attention. You are vulnerable to enemy fire when scaling an outside wall. Ideally, move from building to building and climb buildings only under cover of friendly fire. Properly positioned friendly weapons can suppress and eliminate enemy fire. If you must scale a wall with a rope, avoid silhouetting yourself in windows of uncleared rooms and avoid exposing yourself to enemy fires from lower windows. Climb with your weapon slung over your firing shoulder so you can bring it quickly to a firing position. If the rules of engagement (ROE, which are the rules governing the use of force) permit, engage the objective window and any lower-level windows in your path with grenades (hand or launcher) before you ascend. Enter the objective window with a low silhouette. You can enter head first, but the best way is to hook a leg over the window sill and enter sideways, straddling the ledge.

ENTER AT LOWER LEVELS

Buildings are best cleared from the top down. However, you might not be able to enter a building from the top. Entry at the bottom or lower level is common, and might be the only way. When entering at lower levels, avoid entering through windows and doors, since either is easily booby-trapped, and both are usually covered by enemy fire (Figure 9-7, Figure 9-8, Figure 9-9, and Figure 9-10). Use these techniques when you can enter the building without receiving effective enemy fire. When entering at lower levels, use demolitions, artillery, tank fire, SLMs, CCMs, ramming of an armored vehicle into a wall, or similar means to create a new entrance and avoid booby traps. This is the best technique, ROE permitting. Once you use these means, enter quickly to take advantage of the effects of the blast and concussion. Door breaching is the best way to enter at the lower level. Before entering, you may throw a hand grenade into the new entrance to reinforce the effects of the original blast.

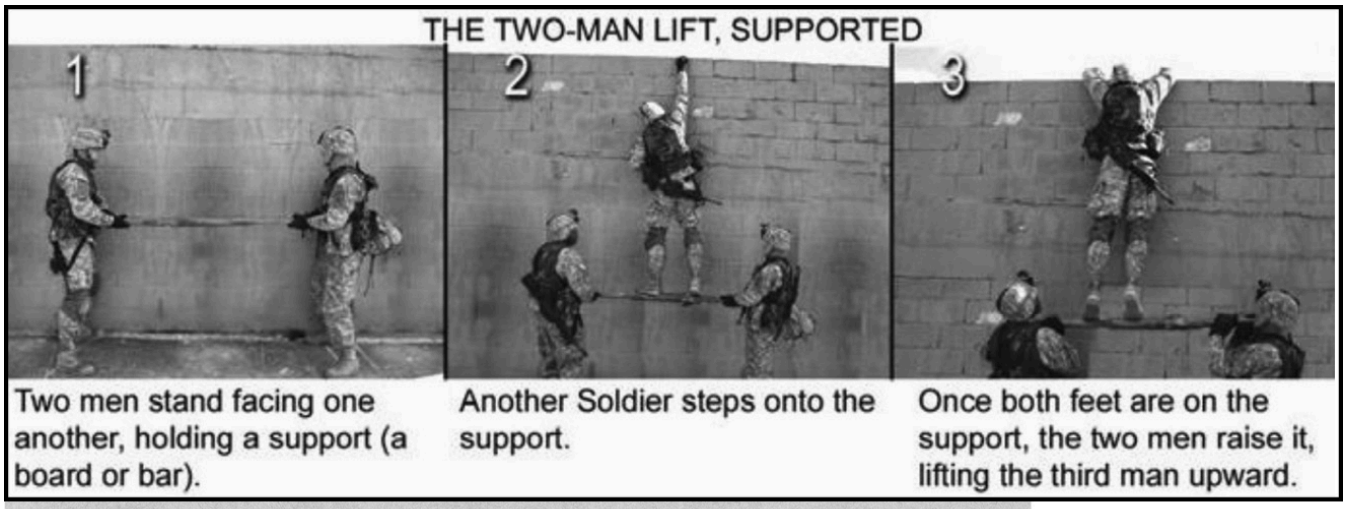


Figure 9-7. Lower-level entry technique with support bar.

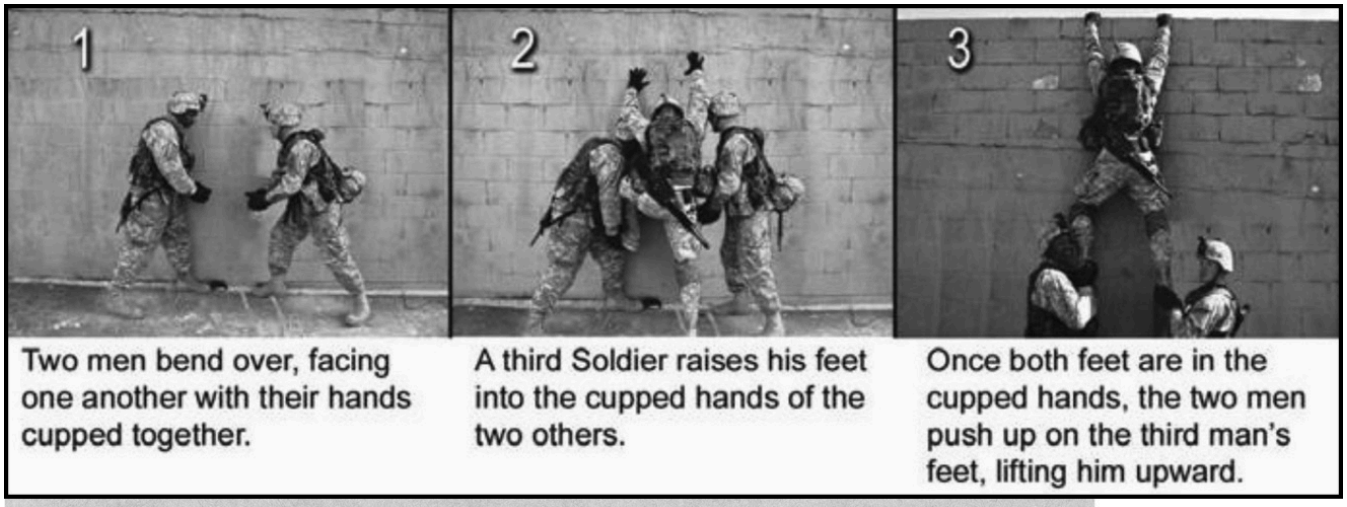


Figure 9-8. Lower-level entry technique without support bar.

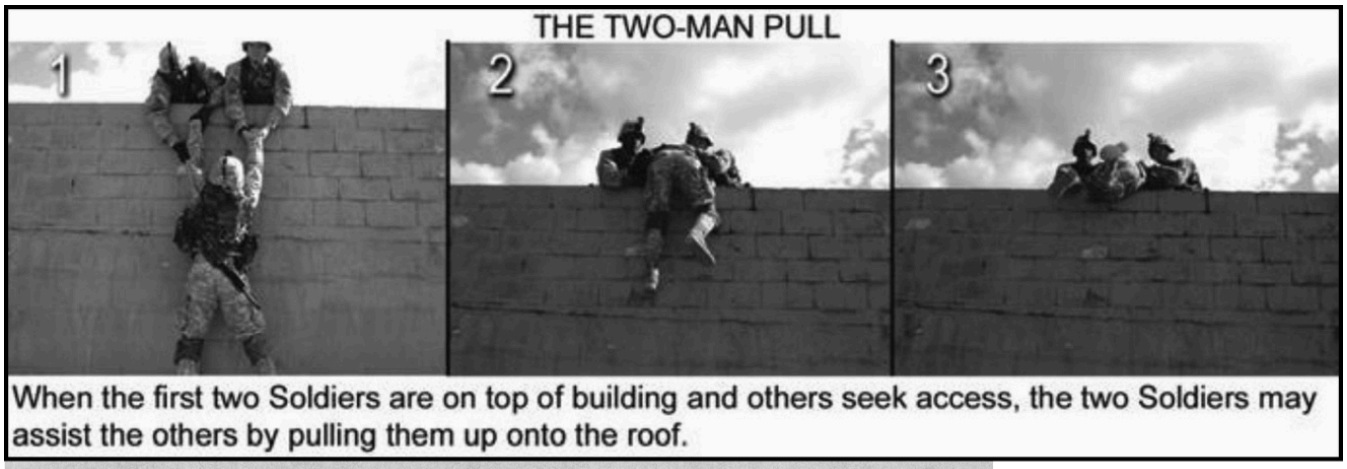


Figure 9-9. Lower-level entry two-man pull technique.

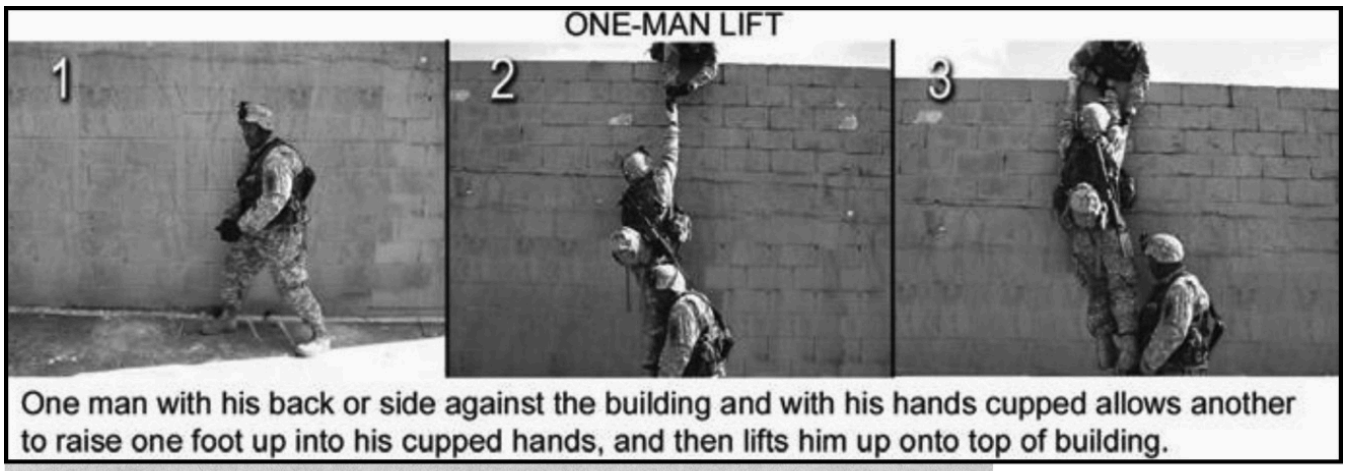


Figure 9-10. Lower-level entry one-man lift technique.

Note: Armored vehicles can be positioned next to a building so soldiers can use them as a platform for entering a room or gaining access to a roof.

Blow or cut breach holes through walls to allow you to enter a building. Such entrances are safer than doors, because doors are easily booby-trapped and should be avoided, unless you conduct an explosive breach on the door.

- Throw a grenade through the breach before entering. Use available cover, such as the lower corner of the building, for protection from fragments.
- Use stun and concussion grenades when engaging through thin walls.

When a door is your only way into a building, beware of booby traps and fire from enemy soldiers inside the room. You can breach (force open) a locked door using one of four breaching methods:

- Mechanical.
- Ballistic.
- Explosive.
- Thermal.

If none of these methods is available, you may kick the door open. This is the worst method, since it is difficult and tiring. Also, it rarely works the first time, giving any enemy inside ample time to shoot you through the door.

- When opening an unlocked door by hand, make sure you and the rest of the assault team avoid exposing yourselves to enemy fire through the door. To reduce exposure, stay close to one side of the doorway.
- ROE permitting, once you get the door open, toss in a hand grenade. Once it explodes, enter and clear the room.

EMPLOY HAND GRENADES

Combat in urban areas often requires extensive use of hand grenades. Unless the ROE or orders prevent it, use grenades before assaulting defended areas, moving through breaches, or entering unsecured areas. Effective grenade use in urban areas may require throwing overhand or underhand, with either the left or right hand.

Note: To achieve aboveground detonation or near-impact detonation, remove the grenade's safety pin, release the safety lever, count "One thousand one, one thousand two," and throw the grenade. This is called cooking off. Cooking off takes about two seconds of the grenade's four- to five-second delay, and it allows the grenade to detonate above ground or shortly after impact with the target.

Types

Three types of hand grenades can be used when assaulting an urban objective: stun, concussion, and fragmentation. The type of construction materials used in the objective building influence the type of grenades that can be used.

- ***M84 Stun Hand Grenade***—This grenade is a flash-bang distraction device that produces a brilliant flash and a loud bang to briefly surprise and distract an enemy force. The M84 is often used under precision conditions and when the ROE demand use of a nonlethal grenade. The use of stun hand grenades under high-intensity conditions is usually limited to situations where fragmentation and concussion grenades pose a risk to friendly troops or the structural integrity of the building.
- ***Concussion Grenade***—The concussion grenade causes injury or death to persons in a room by blast overpressure and propelling debris within the room. While the concussion grenade does not discard a dangerous fragmentation from its body, the force of the explosion can create debris fallout that may penetrate thin walls.
- ***Fragmentation Grenade***—The fragmentation grenade produces substantial overpressure when used inside buildings and, coupled with the shrapnel effects, can be extremely dangerous to friendly soldiers. If the walls of a building are made of thin material, such as Sheetrock or thin plywood, you should either lie flat on the floor with your helmet towards the area of detonation or move away from any wall that might be penetrated by grenade fragments.

- ***High-Explosive, Dual-Purpose (HEDP) Grenade***—The best round for engaging an urban threat is the M433 high-explosive, dual-purpose cartridge (TM 3-22.31 [*40-mm Grenade Launchers*] and Figure 9-11).

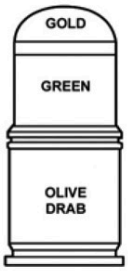
High Explosive Dual-Purpose Round M433: DODAC 1310-B546 	Ogive:	Gold-colored steel cup	This round has a small slug (1/4 inch diameter) that penetrates at least 5 cm (2 in) of steel armor when fired straight (flat, that is, at 0 degree obliquity) within 150 m.
	Body:	Green	
	Skirt:	Olive drab aluminum	
	Markings:	White	When fired at a point target, it arms between 14 and 27 m (46 to 89 ft). It can cause –
	Length:	10.29 cm (4.05 in)	• Casualties within 165 m. • Incapacitation within 15 m. • Death within 5 m.
	Weight:	0.23 kg (0.51 lb)	

Figure 9-11. M433 HEDP grenade.

Safety

It is easier to fire a grenade into an upper-story window using an M203 grenade launcher than it is to throw it by hand.

- When someone must throw a hand grenade into an upper-story opening, he stands close to the building, using it for cover. He should only do this if the window opening has no glass or screening.
- He allows the grenade to cook off for at least two seconds and then steps out far enough to lob the grenade into the upper-story opening. He keeps his weapon in his non-throwing hand, to use if needed. He never lays down his weapon, either outside or inside the building.
- The team must locate the nearest cover, in case the grenade falls back outside with them, instead of landing inside the building.
- Once a soldier throws a grenade into the building and it detonates, the team must move swiftly to enter the building or room.

CLEARING A ROOM

This paragraph discusses how to enter and clear a room:

SQUAD LEADER

1. Designates the assault team and identifies the location of the entry point for the team.
2. Positions the follow-on assault team to provide overwatch and supporting fires for the initial assault team.

ASSAULT TEAM

3. Moves as near the entry point as possible, using available cover and concealment.
4. If a supporting element is to perform an explosive or ballistic breach, it remains in a covered position until after the breach. If necessary, it provides overwatch and fire

support for the breaching element.

5. Before moving to the entry point, team members signal each other that they are ready.
6. Avoids using verbal signals, which could alert the enemy.
7. To reduce exposure to fire, moves quickly from cover to the entry point.
8. Enters through the breach and, unless someone throws a grenade before the team enters, the team avoids stopping outside of the point of entry.

TEAM LEADER (SOLDIER NO. 2)

9. Has the option of throwing a grenade into the room before entry. Grenade type (fragmentation, concussion, or stun) depends on the ROE and the building structure.
10. If stealth is moot (not a factor), sounds off when he throws grenade, for example, *Frag out*, *Concussion out*, or *Stun out*.
11. If stealth is a factor, uses visual signals when he throws a grenade.

ASSAULT TEAM

12. On the signal to go, or immediately after the grenade detonates, moves through the entry point and quickly takes up positions inside the room. These positions must allow the team to completely dominate the room and eliminate the threat. Unless restricted or impeded, team members stop moving only after they clear the door and reach their designated point of domination. In addition to dominating the room, all team members identify possible loopholes and mouseholes in the ceiling, walls, and floor.

Note: Where enemy forces may be concentrated and the presence of noncombatants is unlikely, the assault team can precede their entry by throwing a fragmentation or concussion grenade (structure dependent) into the room, followed by aimed, automatic small-arms fire by the number-one soldier as he enters.

SOLDIER NO. 1 (RIFLEMAN)

13. Enters the room and eliminates the immediate threat. Goes left or right, normally along the path of least resistance, toward one of two corners. When using a doorway as the point of entry, determines the path of least resistance based on the way the door opens.
    a. If it opens outward, he moves toward the hinged side.
    b. If it opens inward, he moves away from the hinges.
14. On entering, gauges the size of the room, the enemy situation, and any furniture or other obstacles to help him determine his direction of movement.

ASSAULT TEAM

15. Avoids planning where to move until the exact layout of the room is known. Then, each soldier goes in the opposite direction from the soldier in front of him. Every team member must know the sectors and duties of each position.

SOLDIER NO. 1

16. As the first soldier goes through the entry point, he can usually see into the far corner of the room. He eliminates any immediate threat and, if possible, continues to move along the wall to the first corner. There he assumes a dominating position facing into the room.

TEAM LEADER (SOLDIER NO. 2)

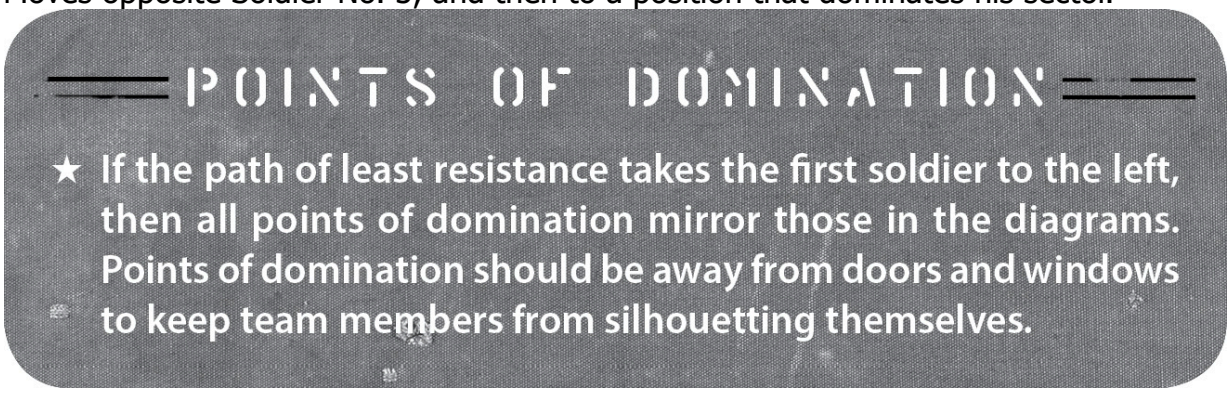
17. Enters about the same time as Soldier No. 1, but as previously stated, moves in the opposite direction, following the wall and staying out of the center. He clears the entry point, the immediate threat area, and his corner, and then moves to a dominating position on his side of the room.

GRENADIER (SOLDIER NO. 3)

18. Moves opposite Soldier No. 2 (team leader), at least three feet (one meter) from the entry point, and then to a position that dominates his sector.

SAW GUNNER (SOLDIER NO. 4)

19. Moves opposite Soldier No. 3, and then to a position that dominates his sector.



ASSAULT TEAM

20. Ensures movement does not mask anyone's fire. On order, any member of the assault team may move deeper into the room, overwatched by the other team members. Once the team clears the room, the team leader signals to the squad leader that the room has been cleared. The squad leader marks the room in accordance with (IAW) unit standard operating procedures (SOP). The squad leader determines whether his squad can continue to clear through the building. The squad reorganizes as necessary. Leaders redistribute the ammunition. The squad leader reports to the platoon leader when the room is clear.

SECTION III. FIGHTING POSITIONS

How do you find and use a fighting position properly? You have to know this: whether you are attacking or defending, your success depends on your ability to place accurate fire on the enemy—with the least exposure to return fire (Figure 9-12).

- Make maximum use of available cover and concealment.
- Avoid firing over cover; when possible, fire around it.
- Avoid silhouetting against light-colored buildings, the skyline, and so on.
- Carefully select a new fighting position before leaving an old one.
- Avoid setting a pattern. Fire from both barricaded and non-barricaded windows.
- Keep exposure time to a minimum.
- Begin improving your hasty position immediately after occupation.
- Use construction material that is readily available in an urban area.
- Remember: positions that provide cover at ground level may not provide cover on higher floors.

Figure 9-12. Some considerations for selecting and occupying individual fighting positions.

HASTY FIGHTING POSITION

A hasty fighting position is normally occupied in the attack or early stages of defense. It is a position from which you can place fire upon the enemy while using available cover for protection from return fire. You may occupy it voluntarily or be forced to occupy it due to enemy fire. In either case, the position lacks preparation before occupation. Some of the more common hasty fighting positions in an urban area are corners of buildings, behind walls, windows, unprepared loopholes, and the peak of a roof.

CORNERS OF BUILDINGS

You must be able to fire your weapon (both right- and left-handed) to be effective around corners.

- A common error made in firing around corners is firing from the wrong shoulder. This exposes more of your body to return fire than necessary. By firing from the proper shoulder, you can reduce exposure to enemy fire (Figure 9-13).

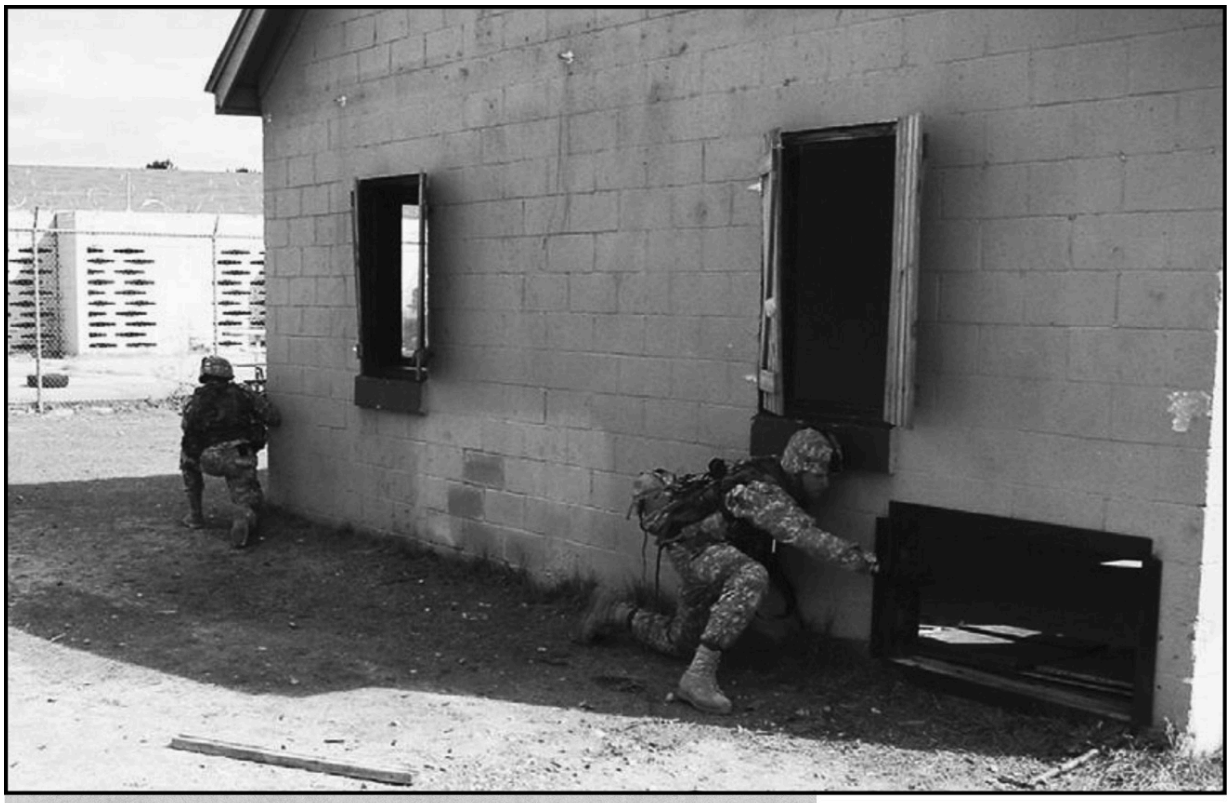


Figure 9-13. Soldier firing left- or right-handed.

- Another common mistake when firing around corners is firing from the standing position. If the soldier exposes himself at the height the enemy expects, then he risks exposing the entire length of his body as a target for the enemy (Figure 9-14).

Figure 9-14. Soldier firing around a corner.

WALLS

When firing from behind walls, you must fire around cover and not over it.

WINDOWS

In an urban area, windows provide convenient firing ports. Avoid firing from the standing position, which would expose most of your body to return fire from the enemy, and which could silhouette you against a light-colored interior background. This is an obvious sign of your

position, especially at night when the muzzle flash can be easily observed. To fire from a window properly, remain well back in the room to hide the flash and kneel to limit exposure and avoid silhouetting yourself.

LOOPHOLES

You may fire through a hole created in the wall and avoid windows. You must stay well back from the loophole so the muzzle of the weapon does not protrude beyond the wall, and the muzzle flash is concealed.

ROOF

The peak of a roof provides a vantage point that increases field of vision and the ranges at which you can engage targets (Figure 9-15). A chimney, smokestack, or any other object protruding from the roof of a building should be used to reduce the size of the target exposed.

Figure 9-15. Soldier firing from peak of a roof.

NO POSITION AVAILABLE

When subjected to enemy fire and none of the positions mentioned above are available, you must try to expose as little of yourself as possible. You can reduce your exposure to the enemy by lying in the prone position as close to a building as possible, on the same side of the open area as the enemy. In order to engage you, the enemy must then lean out the window and expose himself to return fire.

NO COVER AVAILABLE

When no cover is available, you can reduce your exposure by firing from the prone position, by firing from shadows, and by presenting no silhouette against buildings.

PREPARED FIGHTING POSITION

A prepared firing position is one built or improved to allow you to engage a particular area, avenue of approach, or enemy position, while reducing your exposure to return fire. Examples of prepared positions include barricaded windows, fortified loopholes, and sniper, antiarmor, and machine gun positions.

BARRICADED WINDOWS

The natural firing port provided by windows can be improved by barricading the window, leaving a small hole for you to use. Materials torn from the interior walls of the building or any other available material may be used for barricading.

Barricade all windows, whether you intend to use them as firing ports or not. Keep the enemy guessing. Avoid making neat, square, or rectangular holes, which clearly identify your firing positions to the enemy. For example, a barricaded window should not have a neat, regular firing port. The window should remain in its original condition so that your position is hard to detect. Firing from the bottom of the window gives you the advantage of the wall because the firing port is less obvious to the enemy. Sandbags are used to reinforce the wall below the window and to increase protection. All glass must be removed from the window to prevent injury. Lace curtains permit you to see out and prevent the enemy from seeing in. Wet blankets should be placed under weapons to reduce dust. Wire mesh over the window keeps the enemy from throwing in hand grenades.

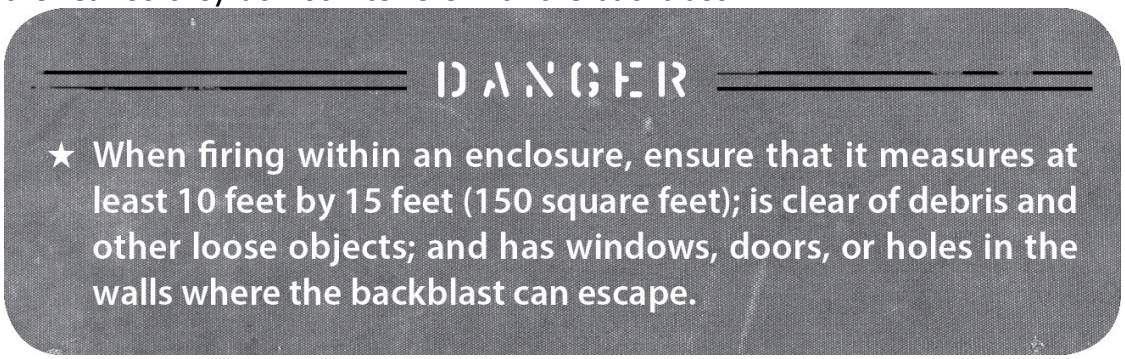
LOOPHOLES

Although windows usually are good fighting positions, they do not always allow you to engage targets in your sector. To avoid establishing a pattern of always firing from windows, alternate positions; for example, fire through a rubbled outer wall, from an interior room, or from a prepared loophole. The prepared loophole involves cutting or blowing a small hole into the wall to allow you to observe and engage targets in your sector. Use sandbags to reinforce the walls below, around, and above the loophole.

- **Protection**—Two layers of sandbags are placed on the floor to protect you from an explosion on a lower floor (if the position is on the second floor or higher). Construct a wall of sandbags, rubble, and furniture to the rear of the position as protection from explosions in the room. A table, bedstead, or other available material can provide overhead cover (OHC) for the position. This cover prevents injury from falling debris or explosions above your position.
- **Camouflage**—Hide the position in plain sight by knocking other holes in the wall, making it difficult for the enemy to determine which hole the fire is coming from. Remove exterior siding in several places to make loopholes less noticeable. Due to the angled firing position associated with loopholes, you can use the same loophole for both primary and supplementary positions. This allows you to shift your fire easily onto a sector that was not previously covered by small-arms fire.
- **Backblast**—SLM and CCM crews may be hampered in choosing firing positions due to the backblast of their weapons. They may not have enough time to knock out walls in

buildings and clear backblast areas. They should select positions that allow the backblast to escape, such as corner windows where the round fired goes out one window and the backblast escapes from another. When conducting defensive operations the corner of a building can be improved with sandbags to create a firing position.

- **Shoulder-Launched Munitions and Close Combat Missiles**—Various principles of employing SLM and CCM weapons have universal applications. These include using available cover, providing mutual support, and allowing for backblast. However, urban areas require additional considerations. Soldiers must select numerous alternate positions, particularly in structures without cover from small-arms fire. Soldiers must position their weapons in the shadows and within the building.
    - A gunner firing an AT4 or Javelin from the top of a building can use a chimney for cover, if available. He should reinforce his position by placing sandbags to the rear so they do not interfere with the backblast.



    - When selecting firing positions for his SLM or CCM, the gunner uses rubble, corners of buildings, or destroyed vehicles as cover. He moves his weapon along rooftops to find better angles for engaging enemy vehicles. On tall buildings, he can use the building itself as overhead cover. He must select a position where backblast will not damage or collapse the building, or injure him.
    - The machine gunner can emplace his weapon almost anywhere. In the attack, windows and doors offer ready-made firing ports (Figure 9-16). For this reason, avoid windows and doors, which the enemy normally has under observation and fire. Use any opening created in walls during the fighting. Small explosive charges can create loopholes for machine gun positions. Regardless of the openings used, ensure machine guns are inside the building and that they remain in the shadows.

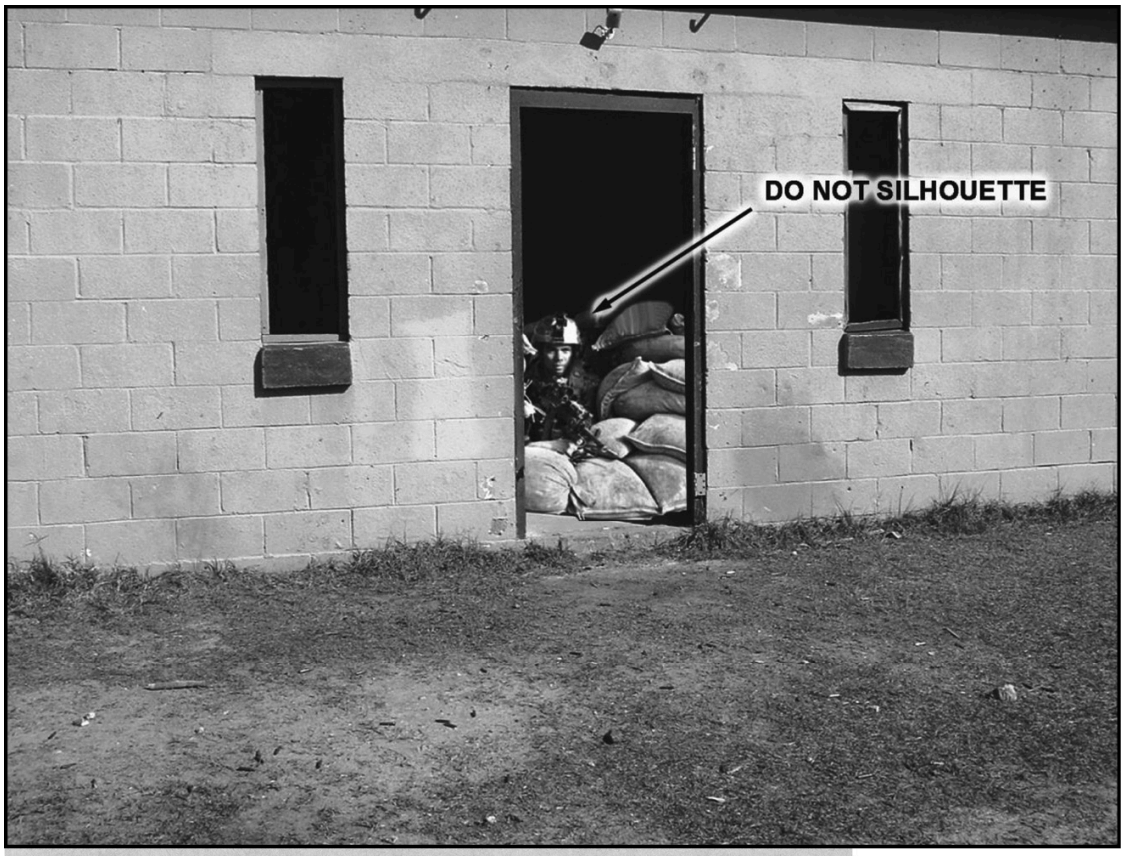


Figure 9-16. Emplacement of machine gun in a doorway.

- Upon occupying a building, board up all windows and doors. Leave small gaps between the boards so you can use windows and doors as alternate positions.
- Use loopholes extensively in the defense. Avoid constructing them in any logical pattern, or all at floor or tabletop levels. Varying height and location makes them hard to pinpoint and identify. Make dummy loopholes and knock off shingles to aid in the deception. Construct loopholes behind shrubbery, under doorjambs, and under the eaves of a building, because these are hard to detect. In the defense, as in the offense, you can construct a firing position to use the building for OHC.
- You can increase your fields of fire by locating the machine gun in the corner of the building or in the cellar. To add cover and concealment, integrate available materials, such as desks, overstuffed chairs, couches, and other items of furniture, into the construction of bunkers.
- Grazing fire is ideal, but sometimes impractical or impossible. Where destroyed vehicles, rubble, and other obstructions restrict the fields of grazing fire, elevate the gun to allow you to fire over obstacles. You might have to fire from second- or third-story loopholes. You can build a firing platform under the roof, and then construct a loophole. Again, conceal the exact location of the position. Camouflage the position by removing patches of shingles over the entire roof.

CHAPTER 10
"EVERY SOLDIER IS A SENSOR"

Every soldier, as a part of a small unit, can provide useful information and is an essential component to the commanders achieving situational understanding. This task is critical, because the environment in which soldiers operate is characterized by violence, uncertainty, complexity, and asymmetric methods by the enemy. The increased situational awareness that you must develop through personal contact and observation is a critical element of the friendly force's ability to more fully understand the operational environment. Your life and the lives of your fellow soldiers could depend on reporting what you see, hear, and smell.

DEFINITION

The "Every Soldier Is a Sensor" (ES2) concept ensures that soldiers are trained to actively observe for details for the commander's critical information requirement (CCIR) while in an area of operation (AO). It also ensures they can provide concise, accurate reports. Leaders will know how to collect, process, and disseminate information in their unit to generate timely intelligence. They should establish a regular feedback and assessment mechanism for improvement in implementing ES2. Every soldier develops a special level of exposure to events occurring in the AO and can collect information by observing and interacting with the environment. Intelligence collection and development is everyone's responsibility. Leaders and soldiers should fight for knowledge in order to gain and maintain greater situational understanding.

RESOURCES

As soldiers develop the special level of exposure to the events occurring in their operating environment, they should keep in mind certain potential indicators as shown in Figure 10-1. These indicators are information on the intention or capability of a potential enemy that commanders need to make decisions. You will serve as the commander's "eyes and ears" when—

SIGHT Look for--	SOUND Listen for--	TOUCH Feel for--	SMELL Smell for--
• Enemy personnel, vehicles, and aircraft • Sudden or unusual movement • New local inhabitants • Smoke or dust • Unusual movement of farm or wild animals • Unusual activity--or lack of activity--by local inhabitants, especially at times or places that are normally inactive or active • Vehicle or personnel tracks • Movement of local inhabitants along uncleared routes, areas, or paths • Signs that the enemy has occupied the area • Evidence of changing trends in threats • Recently cut foliage • Muzzle flashes, lights, fires, or reflections • Unusual amount (too much or too little) of trash	• Running engines or track sounds • Voices • Metallic sounds • Gunfire, by weapon type • Unusual calm or silence • Dismounted movement • Aircraft	• Warm coals and other materials in a fire • Fresh tracks • Age of food or trash	• Vehicle exhaust • Burning petroleum products • Food cooking • Aged food in trash • Human waste

OTHER CONSIDERATIONS	
Armed Elements	Locations of factional forces, mine fields, and potential threats.
Homes and Buildings	Condition of roofs, doors, windows, lights, power lines, water, sanitation, roads, bridges, crops, and livestock.
Infrastructure	Functioning stores, service stations, and so on.
People	Numbers, gender, age, residence or DPRE status, apparent health, clothing, daily activities, and leadership.
Contrast	Has anything changed? For example, are there new locks on buildings? Are windows boarded up or previously boarded up windows now open, indicating a change in how a building is expected to be used? Have buildings been defaced with graffiti?

Figure 10-1. Potential indicators.

- Performing traditional offensive or defensive missions.
- Patrolling in a stability and reconstruction or civil support operation.
- Manning a checkpoint or a roadblock.
- Occupying an observation post.
- Passing through areas in convoys.
- Observing and reporting elements of the environment.
- Observing and reporting activities of the populace in the area of operations.

Commanders get information from many sources, but you are his best source. You can in turn collect information from the following sources:

- Enemy prisoners of war (EPWs)/detainees are an immediate source of information. Turn captured soldiers over to your leader quickly. Also, tell him anything you learn from them.
- Captured enemy documents (CEDs) may contain valuable information about present or future enemy operations. Give such documents to your leader quickly.
- Captured enemy equipment (CEE) eliminates an immediate threat. Give such equipment to your leader quickly.
- Enemy activity (the things the enemy is doing) often indicates what the enemy plans to do.
- Report everything you see the enemy do. Some things that may not seem important to you may be important to your commander.
- Tactical questioning, observation, and interaction with displaced persons, refugees, or evacuees (DPRE) during the conduct of missions can yield important information.
- Local civilians often have the most information about the enemy, terrain, and weather in a particular area. Report any information gained from civilians. However, you cannot be sure which side the civilians are trying to help, so be careful when acting on information obtained from them. If possible, try to confirm the information by some other means.

FORMS OF QUESTIONING

Questioning may be achieved by tactical or direct methods. The following paragraphs detail both methods:

- **Tactical Questioning**—Tactical questioning is the initial questioning for information of immediate value. When the term applies to the interaction with the local population, it is not really questioning but is more conversational in nature. The task can be designed to build rapport as much as to collect information and understand the environment. You will conduct tactical questioning based on your unit's standard operating procedures (SOPs), rules of engagement (ROE), and the order for that mission. Your leaders must include specific guidance for tactical questioning in the operation order (OPORD) for appropriate missions. Information reported because of tactical questioning is passed up through your chain of command to the battalion/brigade intelligence officers (S-2) and assistant chief of staff for intelligence (G-2), which forms a vital part of future planning and operations. Additionally, you are not allowed to attempt any interrogation-approach techniques in the course of tactical questioning.
- **Direct Questioning**—Direct questioning is an efficient method of asking precise questions according to a standard pattern. The goal is to obtain the maximum amount of intelligence information in the least amount of time. Direct questions must clearly indicate the topic being questioned as they require an effective narrative response (i.e., be brief and simple but specific). Clearly define each subject using a logical sequence. Basic questions are used to discourage "yes" or "no" answers. Direct questioning is the only technique authorized for ES2 tactical questioning. Soldiers who are not trained and certified interrogators are forbidden to attempt to apply any interrogation-approach techniques. When it is clear that the person being questioned

has no further information, or does not wish to cooperate further, tactical questioning must stop.

Various AOs will have different social and regional considerations that can affect communications and the conduct of operations (i.e., social behaviors, customs, and courtesies). You must also be aware of the following safety and cultural considerations:

- Know the threat level and force protection (FP) measures in your AO.
- Know local customs and courtesies.
- Avoid using body language that locals might find rude.
- Approach people in normal surroundings to avoid suspicion.
- Behave in a friendly and polite manner.
- Remove sunglasses when speaking to those people with whom you are trying to create a favorable impression.
- Know as much as possible about the local culture, including a few phrases in the local language.
- If security conditions permit, position your weapon in the least intimidating position as possible.

REPORT LEVELS

All information collected by patrols or via other contact with the local population is reported through your chain of command to the unit S-2. The S-2 is responsible for transmitting the information through intelligence channels to the supported military intelligence elements, according to unit intelligence tasks and the OPORD for the current mission. Therefore, if everyone is involved in the collection of combat information, then everyone must be aware of the priority intelligence requirements (PIR). All soldiers who have contact with the local population and routinely travel within the area must know the CCIR, and their responsibility to observe and report. The four levels of mission reports follow:

LEVEL 1

Information of critical tactical value is reported immediately to the S-2 section, while you are still out on patrol. These reports are sent via channels prescribed in the unit SOP. The size, activity, location, uniform, time, equipment (SALUTE) format is an example of Level I reporting.

LEVEL 2

Immediately upon return to base, the patrol will conduct an after-action review (AAR) and write a patrol report. The format may be modified to more thoroughly capture mission-specific information. This report is passed along to the S-2 section prior to a formal debriefing. Your leaders must report as completely and accurately as possible since this report will form the basis of the debriefing by the S-2 section.

LEVEL 3

After receiving the initial patrol report, the S-2 section will debrief your patrol for further details and address PIR and CCIR not already covered in the patrol report.

LEVEL 4

Follow-up reporting is submitted as needed after the unit S-2 section performs the debriefing.

Note: Any patrols or activities should be preceded by a prebriefing, which is a consolidated summary of the AOs historical activities.

SALUTE FORMAT

These four levels help the unit S-2 section record and disseminate both important and subtle details for use in all-source analysis, future planning, and passing on to higher S-2/G-2. This information helps them analyze a broad range of information and disseminate it back to your level and higher. Report all information about the enemy to your leader quickly, accurately, and completely. Such reports should answer the questions who, what, and where after when. Use the SALUTE format when reporting. Make notes and draw sketches to help you remember details. Table 10-1 shows how to use the SALUTE format.

Line No.	Type Info	Description
1	(S)ize/Who	Expressed as a quantity and echelon or size. For example, report 10 enemy "Infantrymen" (not "a rifle squad").
If multiple units are involved in the activity you are reporting, you can make multiple entries.		
2	(A)ctivity/What	Relate this line to the PIR being reported. Make it a concise bullet statement. Report what you saw the enemy doing, for example, "emplacing mines in the road."
3	(L)ocation/Where	This is generally a grid coordinate, and should include the 100,000-meter grid zone designator. The entry can also be an address, if appropriate, but still should include an eight-digit grid coordinate. If the reported activity involves movement, for example, advance or withdrawal, then the entry for location will include "from" and "to" entries. The route used goes under "Equipment/How."
4	(U)nit/Who	Identify who is performing the activity described in the "Activity/What" entry. Include the complete designation of a military unit, and give the name and other identifying information or features of civilians or insurgent groups.
5	(T)ime/When	For future events, give the DTG for when the activity will initiate. Report ongoing events as such. Report the time you saw the enemy activity, not the time you report it. Always report local or Zulu (Z) time.
6	(E)quipment/How	Clarify, complete, and expand on previous entries. Include information about equipment involved, tactics used, and any other essential elements of information (EEI) not already reported in the previous lines.

Table 10-1. SALUTE format line by line.

HANDLING AND REPORTING OF THE ENEMY

The following paragraphs detail adequate protocol for handling enemy documents, EPWs, and equipment:

CAPTURED ENEMY DOCUMENTS

A CED is defined as any piece of recorded information obtained from the threat. CEDs are generally created by the enemy, but they can also be U.S. or multinational forces documents that were once in the hands of the enemy. CEDs can provide crucial information related to answering the commander's PIR or even be exploited to put together smaller pieces of an overall situation.

Every confiscated or impounded CED must be tagged and logged before being transferred through the appropriate channels. The tag contains the specifics of the item, and the log is a simple transmittal document used to track the transfer of CEDs between elements. Your leaders are responsible for creating the initial CED log.

While the information required is formatted, any durable field-expedient material can be used as a CED tag if an official tag is unavailable. Ensure that the writing is protected from the elements by covering it with plastic or transparent tape. The importance of the tag is that it is complete and attached to the CED it represents. The following information, at a minimum, should be recorded on a CED tag. Instructions for filling out the tag follow (Figure 10-2):

Nationality—Detail the country of origin of the unit that captured the enemy document.

Date-Time Group—Include date and time of capture.

Place—Include a six- to eight-digit grid coordinate and describe the location where the document was captured.

Identity—Define where the CED came from, its owner, and so on.

Circumstances—Describe how the CED was obtained.

Description—Briefly describe the CED. Enough information should be annotated for quick recognition.

Figure 10-2. Example captured document tag.

TREATMENT OF EPWS AND DETAINEES

EPWs/detainees are a good source of information. They must be handled without breaking international law and without losing a chance to gain intelligence. Treat EPWs humanely. Do not harm them, either physically or mentally. The senior soldier present is responsible for their care. If EPWs cannot be evacuated in a reasonable time, give them food, water, and first aid. Do not give them cigarettes, candy, or other comfort items. EPWs who receive favors or are mistreated are poor interrogation subjects. In handling EPWs/detainees, follow the procedure of search, segregate, silence, speed, safeguard, and tag (the five Ss and T). It implies the legal obligation that each soldier has to treat an individual in custody of, or under the protection of, U.S. soldiers humanely. The five Ss and T are conducted as follows:

Search—This indicates a thorough search of the person for weapons and documents. You must search and record the EPWs/detainees' equipment and documents separately. Record the description of weapons, special equipment, documents, identification cards, and personal effects on the capture tag.

Silence—Do not allow the EPWs/detainees to communicate with one another, either verbally or with gestures. Keep an eye open for potential troublemakers, both talkers and quiet types, and be prepared to separate them.

Segregate—Keep civilians and military separate, and then further divide them by rank, gender, nationality, ethnicity, and religion. This technique helps keep them quiet.

Safeguard—Provide security for and protect the EPWs/detainees. Get them out of immediate danger and allow them to keep their personal chemical protective gear, if they have any, and their identification cards.

Speed—Information is time sensitive. It is very important to move personnel to the rear as quickly as possible. The other thing to consider is that an EPW/detainee's resistance to questioning grows as time goes on. The initial shock of being captured or detained wears off and they begin to think of escape.

Note: Exercising speed, in this instance, is critical because the value of information erodes in a few hours. Human intelligence (HUMINT) soldiers who are trained and who have the appropriate time and means will be waiting to screen and interrogate these individuals.

PERSONNEL AND EQUIPMENT TAGS

Use wire, string, or other durable material to attach Part A, DD Form 2745, Enemy Prisoner of War (EPW) Capture Tag, or a field-expedient alternative, to the detainee's clothing. Tell him not to remove or alter the tag. Attach another tag to any confiscated property. On each tag, write the following, making sure that your notes clearly link the property with the person from whom you confiscated it:

- Date and time of capture.
- Location of the capture (grid coordinates).
- Capturing unit.
- Circumstances of capture (why person was detained).
    - Who?
    - What?
    - Where?
    - Why?
    - Witnesses?

OPERATIONS SECURITY

Operations security (OPSEC) is the process your leaders follow to identify and protect essential elements of friendly information (EEFI). The army defines EEFI as critical aspects of a friendly operation that, if known by the enemy, would subsequently compromise, lead to failure, or limit success of the operation and therefore must be protected from detection. All soldiers execute OPSEC measures as part of FP. Effective OPSEC involves telling soldiers exactly why OPSEC measures are important, and what they are supposed to accomplish. You must understand that the cost of failing to maintain effective OPSEC can result in the loss of lives. Understanding why you are doing something and what your actions are supposed to accomplish allows you and your fellow soldiers to execute tasks more effectively. However, this means that you and your fellow soldiers must—

- Avoid taking personal letters or pictures into combat areas.
- Avoid keeping diaries in combat areas.
- Practice camouflage principles and techniques.
- Practice noise and light discipline.
- Practice field sanitation.
- Use proper radiotelephone procedure.
- Use the challenge and password properly.
- Abide by the Code of Conduct (if captured).
- Report any soldier or civilian who is believed to be serving with or sympathetic to the enemy.
- Report anyone who tries to get information about U.S. operations.
- Destroy all maps or important documents if capture is imminent.
- Avoid discussing military operations in public areas.
- Discuss military operations only with those persons having a need to know the information.
- Remind fellow soldiers of their OPSEC responsibilities.

OBSERVATION TECHNIQUES

During all types of operations, you will be looking for the enemy. However, there will be times when you will be posted in an observation post (OP) to watch for enemy activity. An OP is a position from which you watch an assigned sector of observation and report all activity seen or heard in your sector.

DAY OBSERVATION

In daylight, use the visual search technique to search terrain. You must visually locate and distinguish enemy activity from the surrounding terrain features by using the following scanning techniques:

Rapid Scan—This is used to detect obvious signs of enemy activity. It is usually the first method you will use (Figure 10-3). To conduct a rapid scan—

- Search a strip of terrain about 100 meters deep, from left to right, pausing at short intervals.
- Search another 100-meter strip farther out, from right to left, overlapping the first strip scanned, pausing at short intervals.
- Continue this method until the entire sector of fire has been searched.

Slow Scan—The slow-scan search technique uses the same process as the rapid scan but much more deliberately, which means a slower, side-to-side movement and more frequent pauses (Figure 10-3).

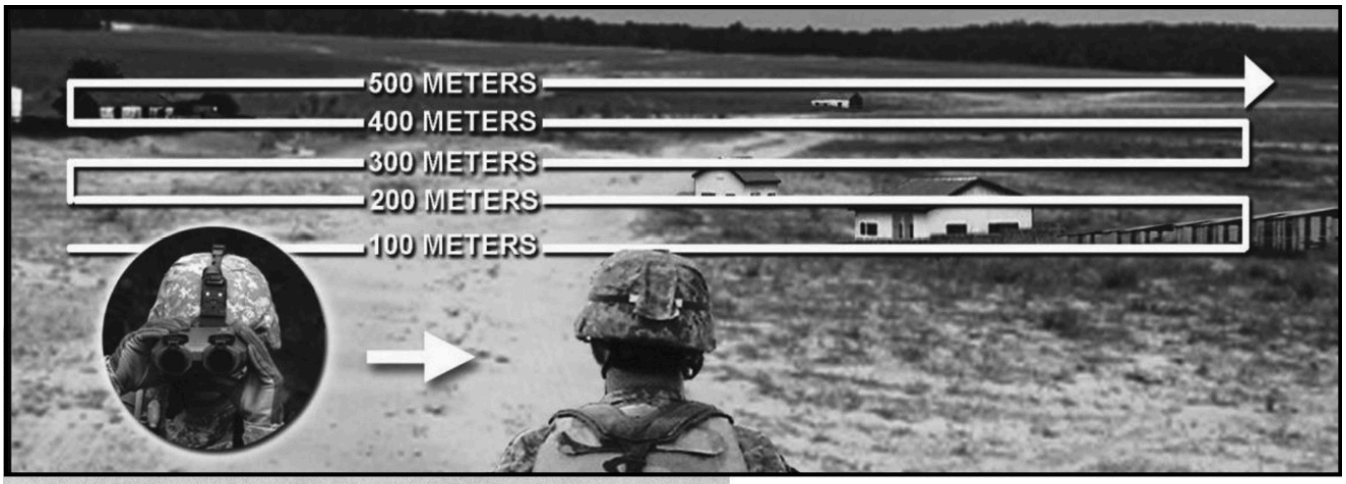


Figure 10-3. Rapid/slow-scan pattern.

Detailed Search—If you find no targets using either the rapid- or slow-scan techniques, make a careful, detailed search of the target area using M22 binoculars. The detailed search is like the slow scan, but searching smaller areas with frequent pauses and almost incremental movement. The detailed search, even more than the rapid or slow scan, depends on breaking a larger sector into smaller sectors to ensure everything is covered in detail and no possible enemy positions are overlooked (Figure 10-4). You must pay attention to the following:

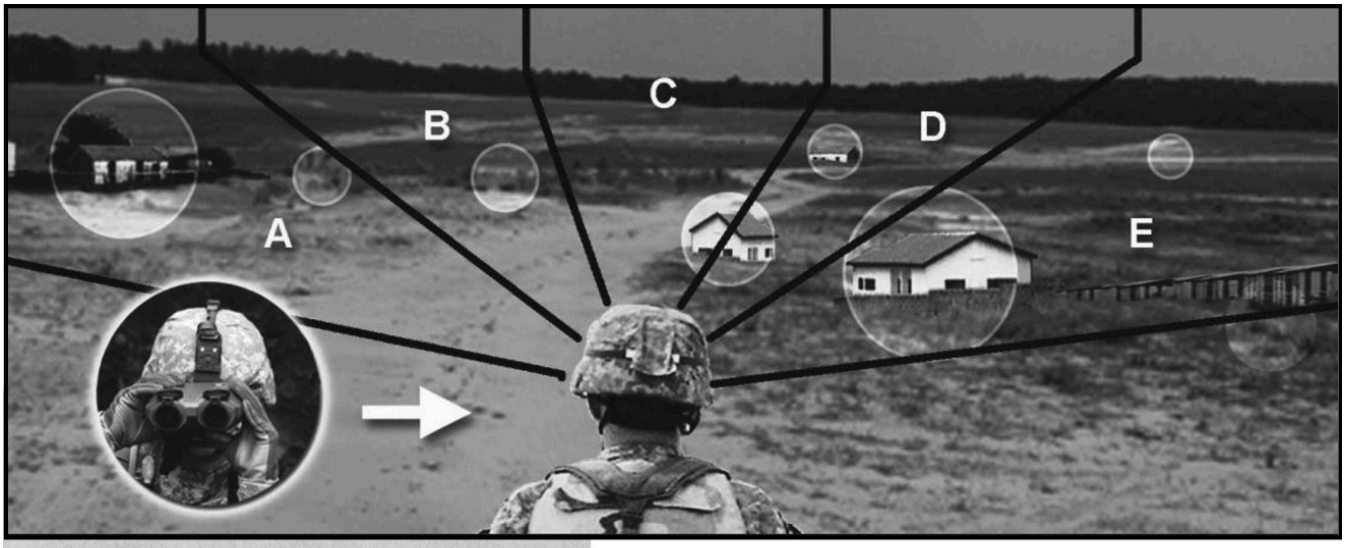


Figure 10-4. Detailed search.

- Likely enemy positions and suspected vehicle/dismounted avenues of approach.

- Target signatures, such as road junctions, hills, and lone buildings, located near prominent terrain features.
- Areas with cover and concealment, such as tree lines and draws.

LIMITED-VISIBILITY OBSERVATION

Although operating at night has definite advantages, it is also difficult. Your eyes do not work as well as during the day, yet they are crucial to your performance. You need to be aware of constraints your eyes place upon you at night, because 80 percent of your sensory input comes through them. Your ability to see crisp and clear images is significantly reduced.

Dark Adaptation

Dark adaptation is the process by which the human body increases the eye's sensitivity to low levels of light. Adaptation to darkness occurs at varying degrees and rates. During the first thirty minutes in the dark, eye sensitivity increases about 10,000 times. Dark adaptation is affected by exposure to bright light such as matches, flashlights, flares, or vehicle headlights. Full recovery from these exposures can take up to forty-five minutes. Your color perception decreases at night. You may be able to distinguish light and dark colors depending on the intensity of reflected light. At night, bright warm colors such as reds and oranges are hard to see and will appear dark. In fact, reds are nearly invisible at night. Unless a dark color is bordered by two lighter colors, it is invisible. On the other hand, greens and blues will appear brighter, although you may not be able to determine their color. Since visual sharpness at night is one-seventh of what it is during the day, you can see only large, bulky objects, so you must recognize objects by their general shape or outline. Knowing the design of structures common in the AO will help you determine shape or silhouette. Darkness also reduces depth perception.

Normal Blind Spots—The normal blind spot is always present, day and night. It is caused by the lack of light receptors where the optic nerve inserts into the back of the eye. The normal blind spot occurs when you use just one eye. When you close the other eye, objects about twelve to fifteen degrees away from where you are looking will disappear. When you uncover your eye, the objects will reappear.

Night Blind Spots—When you stare at an object at night, under starlight or lower levels of illumination, it can disappear or fade away. This is a result of the night blind spot. It affects both eyes at the same time and occurs when using the central vision of both eyes. Consequently, larger and larger objects are missed as the distances increase. In order to avoid the night blind spots, look to all sides of objects you are trying to find or follow. Do not stare. This is the only way to maximize your night vision.

Night Observation Techniques

The following paragraphs detail night observation techniques:

Dark Adaptation Technique—First, let your eyes become adjusted to the darkness. Do so by staying either in a dark area for about thirty minutes, or in a red-light area for about twenty minutes followed by about ten minutes in a dark area. The red-light method may save time by allowing you to get orders, check equipment, or do some other job before moving into darkness.

Night-Vision Scans—Dark adaptation is only the first step toward making the greatest use of night vision. Scanning enables you to overcome many of the physiological limitations of your eyes (Figure 10-5). It can also reduce confusing visual illusions or your eyes playing tricks on you. This technique involves looking from right to left or left to right using a slow, regular scanning movement. At night, it is essential to avoid looking directly at a faintly visible object when trying to confirm its presence.

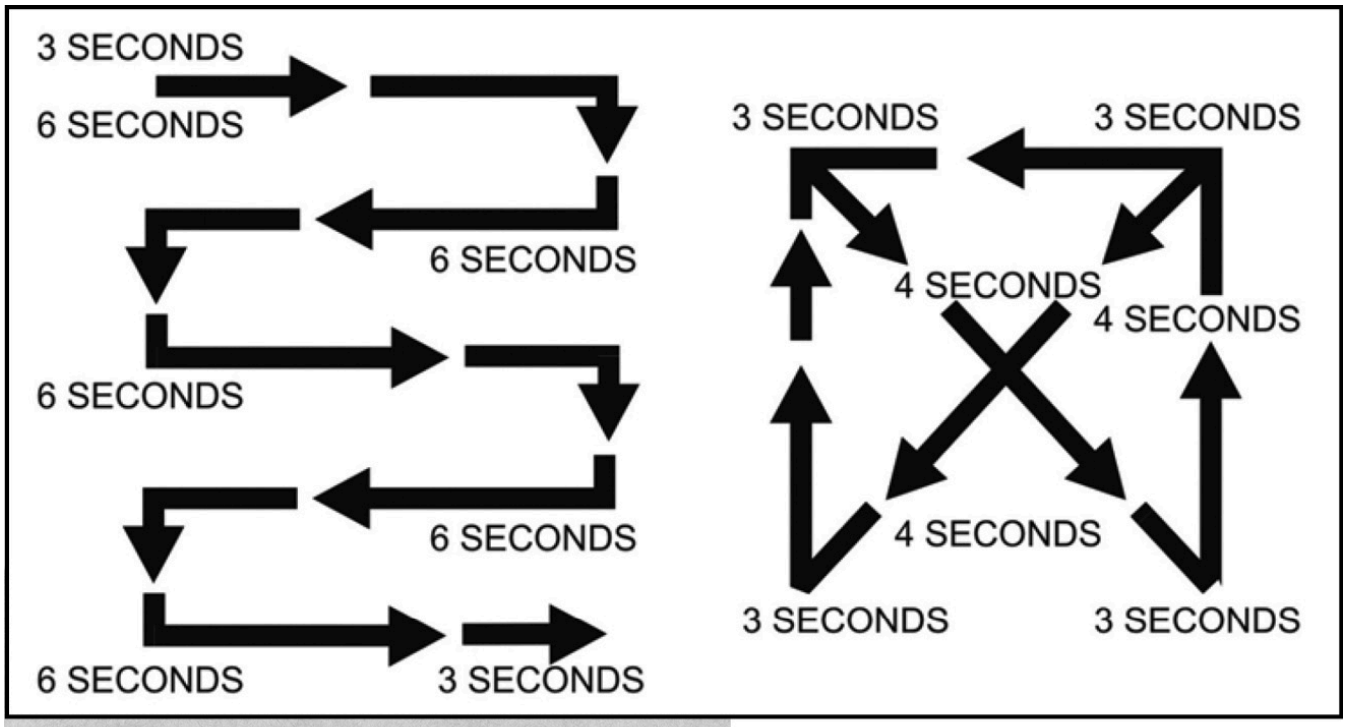


Figure 10-5. Typical scanning pattern.

Off-Center Vision—The technique of viewing an object using central vision is ineffective at night. Again, this is due to the night blind spot that exists during low illumination (Figure 10-6). You must learn to use off-center vision. This technique requires viewing an object by looking ten degrees above, below, or to either side of it rather than directly at it. Additionally, diamond viewing is very similar in that you move your eyes just slightly, a few degrees, in a diamond pattern around the object you wish to see. However, the image of an object bleaches out and becomes a solid tone when viewed longer than two or three seconds. You do not have to move your head to use your peripheral vision. By shifting your eyes from one off-center point to another, you can continue to pick up the object in your peripheral field of vision.

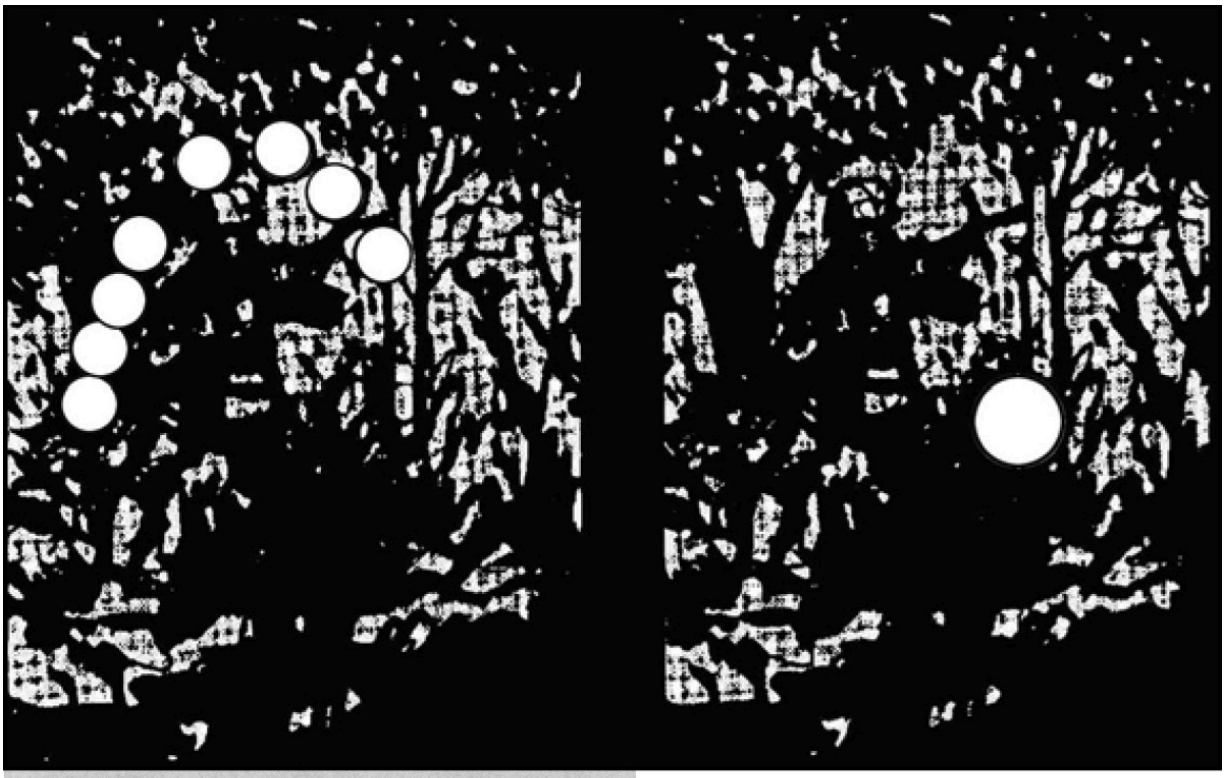


Figure 10-6. Off-center viewing.

LIMITED-VISIBILITY DEVICES

The three devices used to increase lethality at night include night vision devices (NVDs), thermal weapon sights, and aiming lasers. Each provides different views of the infrared (IR) spectrum, which is simple energy. The electromagnetic spectrum is simply energy (light). Before you can fully operate these devices, you must know how they work in the IR range, and you must know the electromagnetic (light) spectrum. You should also know the advantages and disadvantages of each piece of equipment. This is the only way to know when to employ which.

Image-Intensification Devices—An image intensifier captures ambient light and then amplifies it thousands of times electronically, allowing you to see the battlefield through night vision goggles (NVGs). Ambient light comes from the stars, moon, or sky glow from distant man-made sources such as cities. Humans can see only part of this spectrum of light with the naked eye. Just beyond red visible light is infrared (IR) light, which is broken down into three ranges—near, middle, and far infrared. Leaders can conduct combat missions with no active illumination sources, just image intensifiers. However, the main advantages of image intensifiers as NVDs are their small sizes, light weights, and low power requirements. Image intensifiers increase vision into the IR range. They rely on ambient light and energy in the near IR range. This energy emits from natural and artificial sources such as moonlight, starlight, and city lights. Image intensifiers include the following (Figure 10-7):

Figure 10-7. AN/PVS-7 and AN/PVS-14.

- AN/PVS-7A/B/C/D.
- AN/PVS-14.

Thermal Imaging Devices

The second type of device that uses IR light is the thermal imaging device (Figure 10-8). This type of device detects electromagnetic radiation (heat) from humans and man-made objects and translates that heat into an electronic image. Thermal imagers operate the same regardless of the level of ambient light. Thermal weapon sights (TWSs) operate in the middle to far IR ranges. These sights detect IR light emitted from friction, from combustion, or from any objects that are radiating natural thermal energy. Since the TWS and other thermal devices operate within the middle/far IR range, they cannot be used with image intensifiers. Thermal devices can be mounted on a weapon or handheld. The TWS works well day or night. It has excellent target acquisition capabilities, even through fog, haze, and conventional battlefield smoke.

Figure 10-8. AN/PAS-13, V1, V2, and V3.

- AN/PAS-13(V1) light weapon thermal sight (LWTS).
    - M16- and M4-series rifles and carbines.
    - M136 (AT4) light antiarmor weapon.
- AN/PAS-13(V2) medium weapon thermal sight (MWTS).
    - M249 machine gun.
    - M240B series medium machine gun.
- AN/PAS-13(V3) heavy weapon thermal sight (HWTS).
    - M24 Sniper rifle.
    - M107 Sniper rifle.
    - M2 (50 Cal.) HB machine gun.
    - MK 19 machine gun.

Aiming Lasers
Aiming lasers—both the AN/PAQ-4-series and the AN/PEQ-2A (Figure 10-9)—also operate in the electromagnetic spectrum, specifically in the near IR range. These lasers are seen through image-intensification devices. The aiming lasers cannot be used in conjunction with the TWS, because the latter operates in the middle to far IR spectrum.

Figure 10-9. AN/PAQ-4-series and the AN/PEQ-2A.

PROPER ADJUSTMENTS TO THE IMAGE INTENSIFIERS
You must make the proper adjustments to the image intensifiers in order to get the best possible picture. The aiming lasers cannot be seen with the unaided eye; they can be seen only with image-intensification devices. You must know how these devices work to maximize the quality of what is being viewed by making the proper adjustments to these devices.

Scanning
The NVDs have a forty-degree field of view (FOV), leaving the average shooter to miss easy targets of opportunity, more commonly the fifty-meter left or right target. You must train to aggressively scan your sector of fire for targets. Target detection at night is only as good as you practice. Regular blinking during scanning, which must be reinforced during training, relieves some of the eyestrain from trying to spot far targets. After you have mastered the art of scanning, you will find that targets are easier to detect by acknowledging the flicker or movement of a target.

Walking
Once a target has been located, you must be aware of the placement of the aiming laser. Laser awareness is necessary. If you activate your laser and it is pointing over the target into the sky, you will waste valuable time trying to locate exactly where your laser is pointing. Also, it increases your chances of being detected and fired upon by the enemy. When engaging a target, aim the laser at the ground just in front of the target, walk the aiming laser along the ground and up the target until you are center mass, and then engage the target. Walking your laser to the target is a quick and operationally secure means of engaging the enemy with your aiming laser.

IR Discipline
Once a target has been located and engaged with the aiming laser, the laser must be deactivated. On the range, IR discipline means actively scanning with the laser off. Once a target is located, walk the laser to the target and engage. After the target has been engaged, the laser goes off.

RANGE ESTIMATION

You must often estimate ranges. You must accurately determine distance and prepare topographical sketches or range cards. Your estimates will be easier to make and more accurate if you know various range-estimation techniques.

FACTORS

Three factors affect range estimates:

Nature of the Object

Outline—An object of regular outline, such as a house, appears closer than one of irregular outline, such as a clump of trees.

Contrast—A target that contrasts with its background appears to be closer than it actually is.

Exposure—A partly exposed target appears more distant than it actually is.

Nature of Terrain

Contoured terrain—Looking across contoured terrain makes an object seem farther away than it actually is.

Smooth terrain—Looking across smooth terrain, such as sand, water, or snow, makes a distant object seem nearer than it actually is.

Downhill—Looking downhill at an object makes it seem farther away than it actually is.

Uphill—Looking uphill at an object makes it seem nearer than it actually is.

Light Conditions

Sun behind observer—A front-lit object seems nearer than it actually is.

Sun behind object —A back-lit object seems farther away than it actually is.

ESTIMATION METHODS

Methods of range estimation include—

- The 100-meter unit-of-measure method.
- The appearance-of-objects method.
- The flash-and-sound method.
- The mil-relation method.
- A combination of these.

100-Meter Unit-of-Measure Method
Picture a distance of 100 meters on the ground. For ranges up to 500 meters, count the number of 100-meter lengths between the two points you want to measure. Beyond 500 meters, pick a point halfway to the target, count the number of 100-meter lengths to the halfway point, and then double that number to get the range to the target. The accuracy of

the 100-meter method depends on how much ground is visible. This is most true at long ranges. If a target is at a range of 500 meters or more, and you can see only part of the ground between yourself and the target, it is hard to use this method with accuracy. If you know the apparent size and detail of troops and equipment at known ranges, then you can compare those characteristics to similar objects at unknown ranges. When the characteristics match, the range does also.

Appearance-of-Objects Method

To use the appearance-of-objects method, you must be familiar with characteristic details of objects as they appear at various ranges. As you must be able to see those details to make the method work, anything that limits visibility (such as weather, smoke, or darkness) will limit the effectiveness of this method. If you know the apparent size and detail of troops and equipment at known ranges, then you can compare those characteristics to similar objects at unknown ranges. When the characteristics match, the range does also. Table 10-2 shows what is visible on the human body at specific ranges.

RANGE (in meters)	***WHAT YOU SEE***
200	Clear in all detail such as equipment, skin color
300	Clear body outline, face color good, remaining detail blurred
400	Body outline clear, other details blurred
500	Body tapered, head indistinct from body
600	Body a wedge shape, with no head apparent
700	Solid wedge shape (body outline)

Table 10-2. Appearance of a body using appearance-of-objects method.

Flash-and-Sound Method

This method is best at night. Sound travels through air at 1,100 feet (300 meters) per second. That makes it possible to estimate distance if you can both see and hear a sound-producing action. When you see the flash or smoke of a weapon, or the dust it raises, immediately start counting. Stop counting when you hear the sound associated with the action. The number at which you stop should be multiplied by three. This gives you the approximate distance to the weapon in hundreds of meters. If you stop at one, the distance is about 300 meters. If you

stop at three, the distance is about 900 meters. When you must count higher than nine, start over with one each time you hit nine. Counting higher numbers throws the timing off.

Mil-Relation Formula

This is the easiest and best way to estimate range. At 1,000 meters, a 1-mil angle equals 1 meter (wide or high). To estimate the range to a target, divide the estimated height of the target in meters (obtained using the reticle in the M22 binoculars) by the size of the target in mils. Multiply by 1,000 to get the range in meters (Figure 10-10).

$$\frac{\text{estimated height (meters)}}{\text{size of target in mils}} \times 1{,}000 = \text{estimated range (meters)}$$

Figure 10-10. Mil-relation formula.

Combination of Methods

Battlefield conditions are not always ideal for estimating ranges. If the terrain limits the use of the 100-meter unit-of-measure method, and poor visibility limits the use of the appearance-of-objects method, you may have to use a combination of methods. For example, if you cannot see all of the terrain out to the target, you can still estimate distance from the apparent size and detail of the target itself. A haze may obscure the target details, but you may still be able to judge its size or use the 100-meter method. By using either one or both of the methods, you should arrive at a figure close to the true range.

CHAPTER 11
COMBAT MARKSMANSHIP

Combat marksmanship is essential to all soldiers—not only to acquire the expert skills necessary for survival on the battlefield, but also because it enforces teamwork and discipline. In every organization, all members must continue to practice certain skills to remain proficient. Marksmanship is paramount.

This chapter discusses several aspects of combat marksmanship, including safety, administration, weapons, and fire control.

SAFETY

This paragraph describes procedures and requirements for handling all organic and special weapons. These procedures are designed to prevent safety-related accidents and fratricide. They are intended for use in both training and combat, and apply to all assigned weapons of a unit. In all cases, strict self-discipline is the most critical factor for the safe handling of weapons. The procedures for weapons handling may vary based on mission, enemy, terrain, troops, and equipment, time available, and civil considerations (METT-TC), but the following procedures are generally recommended:

- As soon as you are issued a weapon, immediately clear it, and place it on SAFE in accordance with (IAW) the appropriate soldier's or operator's manual.
- Keep the weapon on SAFE, except—
    - When it is stored in an arms room.
    - Immediately before target engagement.
    - When directed by the chain of command.
- At all times, handle weapons as if they are loaded.
- Never point a weapon at anyone, unless a life-threatening situation justifies the use of deadly force.
- Always know where you are pointing the muzzle of the weapon.
- Always know if the weapon is loaded.
- Always know if the weapon is on SAFE.
- Insert magazines or belts of ammunition only on the direction of your chain of command.

Note: The chain of command determines when to load the weapon and chamber a round in reference to METT-TC in a combat environment. Generally, weapons remain on SAFE until ready to fire.

ADMINISTRATIVE PROCEDURES

Administrative procedures include weapons clearing, grounding of weapons, and aircraft and vehicle movement. Soldiers must know how to handle their weapons and have a clear understanding of fire control.

ADMINISTRATIVE WEAPONS CLEARING

Administrative weapons clearing is performed following the completion of the tactical phase of all live fires and range qualifications, or upon reentry of a secure area in combat. Magazines or belts are removed from all weapons. The chain of command inspects all chambers visually, using red-filtered light if at night, and verifies that each weapon and magazine is clear of ammunition. Weapons should also be rodded. Magazines are not reinserted into weapons.

GROUNDING OF WEAPONS

If grounded with equipment, all weapons are placed on SAFE and arranged off the ground with the open chamber visible, if applicable. Bipod-mounted weapons are grounded on bipods with all muzzles facing downrange and away from nearby soldiers.

AIRCRAFT AND VEHICLE MOVEMENT

Weapons should always be cleared and on SAFE when conducting movement in aircraft and vehicles unless leaders issue specific instructions to do otherwise. Keep weapon muzzles pointed downward when traveling on aircraft. Weapons are locked and loaded only after exiting the aircraft or vehicle, or upon command of the leader.

Note: Take extra care to correctly handle the pistol, especially the M9, with its double-action (fire from the hammer down) feature. Removing the pistol from the holster can accidentally move the safety lever to FIRE, permitting immediate double-action mode of fire. Only chamber a round in a pistol when a specific threat warrants doing so.

WEAPONS

Weapons include the M9 pistol; M16-series rifles; M4 carbine rifles; M203 grenade launcher; M249 squad automatic weapon (SAW); M240B machine gun; M2 .50 caliber machine gun; MK 19 grenade machine gun, Mod 3; improved M72 light antiarmor weapon (LAW); M136 AT4; M141 bunker defeat munition (BDM); and Javelin shoulder-fired munition:

M9 PISTOL

A lightweight, semiautomatic, single-action/double-action pistol that can be unloaded without activating the trigger while the safety is in the "on" position (Figure 11-1). The M9 has a fifteen-round staggered magazine. The reversible magazine release button can be positioned for either right- or left-handed shooters. This gun may be fired without a magazine inserted. The M9 is only authorized for 9-mm ball or dummy ammunition that is manufactured to U.S. and NATO specifications. On this weapon, the hammer may be lowered from the cocked, "ready-to-fire" position to the uncocked position without activating the trigger. This is done by placing the thumb safety "ON."

Caliber ..... 9 mm

Weight

Unloaded ..... 2.1 lb
Fully loaded ..... 2.6 lb

Maximum effective range ..... 50 meters

Figure 11-1. M9 pistol.

M16-SERIES RIFLES

A lightweight, air-cooled, gas-operated, magazine-fed rifle designed for either burst or semiautomatic fire through use of a selector lever. There are three models:

M16A2

The M16A2 incorporates improvements in iron sight, pistol grip, stock, and overall combat effectiveness (Figure 11-2). Accuracy is enhanced by an improved muzzle compensator, a three-round burst control, and a heavier barrel; and by using the heavier NATO-standard ammunition, which is also fired by the squad automatic weapon (SAW).

Caliber..... 5.56 mm

Weight..... 8.8 lb (with sling and one loaded magazine)

Maximum effective range

Area target..... 800 meters
Point target ..... 550 meters

Rate of fire

Semiautomatic..... 45 rounds per min
Burst ..... 90 rounds per min

Figure 11-2. M16A2 rifle.

M16A3

The M16A3 is identical to the M16A2 except the A3 has a removable carrying handle mounted on a picatinny rail (for better mounting of optics).

M16A4

The M16A4 is identical to the M16A3 except for the removable carrying handle mounted on a picatinny rail. It has a maximum effective range of 600 meters for area targets. Like the M4-series weapons, the M16-series rifles use ball, tracer, dummy, blank, and short-range training ammunition (SRTA) manufactured to U.S. and NATO specifications.

M4 CARBINE

The M4 is a compact version of the M16A2 rifle, with collapsible stock, flat-top upper-receiver accessory rail, and detachable handle/rear-aperture site assembly (Figure 11-3). This rifle enables a soldier operating in close quarters to engage targets at extended ranges with accurate, lethal fire. It achieves more than 85 percent commonality with the M16A2 rifle.

Caliber	5.56 mm
Weight	7.5 lb (loaded weight with sling and one magazine)
Maximum effective range	
Area target	600 meters
Point target	500 meters
Rate of fire	
Semiautomatic	45 rounds per minute
Burst	90 rounds per minute

Figure 11-3. M4 carbine.

M203 GRENADE LAUNCHER

The M203A1 grenade launcher is a single-shot weapon designed for use with the M4-series carbine. It fires a 40-mm grenade (Figure 11-4). Both have a leaf sight and quadrant sight. The M203 fires high-explosive (HE), high-explosive dual-purpose (HEDP) round, buckshot, illumination, signal, confined space (CS; for riot control), and training practice (TP) ammunition. Two M203s are issued per Infantry squad.

Caliber..... 40 mm

Weight..... 3.0 lb (empty)
3.6 lb (loaded)

Maximum effective range

Area target ..... 350 meters
Point target ..... 150 meters

Rate of fire ..... 5 to 7 rounds per minute

Figure 11-4. M203 grenade launcher.

M249 SQUAD AUTOMATIC WEAPON (SAW)

A lightweight, gas-operated, air-cooled belt or magazine-fed, one-man-portable automatic weapon that fires from the open-bolt position (Figure 11-5). This gun can be fired from the shoulder, hip, or underarm position; from the bipod-steadied position; or from the tripod-mounted position. Two M249s are issued per Infantry squad.

Caliber ..... 5.56 mm

Weight ..... 16.5 lb

Maximum effective range

Area target ..... Tripod ..... 1,000 m
Bipod ..... 800 m

Point target..... Tripod ..... 800 m
Bipod ..... 600 m

Rate of fire

Sustained ..... 100 rounds per min
6- to 9-round bursts
4 to 5 seconds between bursts
Barrel change every 10 minutes

Rapid ..... 200 rounds per minute
6- to 9-round bursts
2 to 3 seconds between bursts
Barrel change every 2 minutes

Cyclic..... 650 to 850 rounds per minute
Continuous burst
Barrel change every minute

Figure 11-5. M249 squad automatic weapon (SAW).

M240B MACHINE GUN

A medium, belt-fed, air-cooled, gas-operated, crew-served, fully automatic weapon that fires from the open bolt position (Figure 11-6). Ammunition is fed into the weapon from a 100-round bandoleer containing ball and tracer (4:1 mix) ammunition with disintegrating metallic split-link belt. Other types of ammunition available include armor-piercing, blank, and dummy rounds. It can be mounted on a bipod, tripod, aircraft, or vehicle. A spare barrel is issued with each M240B, and barrels can be changed quickly as the weapon has a fixed head space. It is being issued to Infantry, armor, combat engineer, special force/rangers, and selected field artillery units that require medium support fires.

Caliber..... 7.62 mm

Weight..... 27.6 lb

Maximum effective range

Area target	Tripod	1,100 m
	Bipod	800 m
Point target	Tripod	800 m
	Bipod	600 m

Rate of fire

Sustained.....	100 rounds per minute 6- to 9-round bursts 4 to 5 seconds between bursts Barrel change every 10 minutes
Rapid	200 rounds per minute 10- to 13-round bursts 2 to 3 seconds between bursts Barrel change every 2 minute
Cyclic	650 to 950 rounds per minute Continuous bursts Barrel change every minute

Figure 11-6. M240B machine gun.

A heavy (barrel), recoil-operated, air-cooled, crew-served, and transportable fully automatic weapon with adjustable headspace (Figure 11-7). A disintegrating metallic link belt is used to feed the ammunition into the weapon. This gun may be mounted on ground mounts and most vehicles as an antipersonnel and antiaircraft/light armor weapon. The gun is equipped with leaf-type rear sight, flash suppressor, and a spare barrel assembly. Associated components are the M63 antiaircraft mount and the M3 tripod mount.

Caliber 50mm

Ammunition ..... 12.7 x 99-mm NATO

Weight ..... 84 lb (44 lb for tripod)

Maximum effective range

Antiaircraft mount ..... 1,400 meters
Tripod mount ..... 2,000 meters

Rate of fire

Cyclic..... 400 to 500 rounds per minute

Figure 11-7. M2 .50 caliber machine gun with M3 tripod mount.

MK 19 GRENADE MACHINE GUN, MOD 3

A self-powered, air-cooled, belt-fed, blowback-operated weapon designed to deliver decisive firepower against enemy personnel and lightly armored vehicles (Figure 11-8). A disintegrating metallic link belt feeds either HE or HEDP ammunition through the left side of the weapon. It replaces the M2 heavy machine guns in selected units, and will be the main suppressive

weapon for combat support and combat service support units. The MK 19 Mod 3 can be mounted on the HMMWV M113 family of vehicles, on five-ton trucks, and on some M88A1 recovery vehicles.

Caliber..... 40 mm

Weight..... 72.5 lb

Maximum effective range

Area target ..... 2,212 meters
Point target ..... 1,500 meters

Rate of fire

Sustained ..... 40 rounds per minute
Rapid..... 60 rounds per minute
Cyclic ..... 325 to 375 rounds per minute

Figure 11-8. MK 19 grenade machine gun, Mod 3.

IMPROVED M72 LIGHT ANTIARMOR WEAPON (LAW)

A compact, lightweight, single-shot, and disposable weapon with a family of warheads optimized to defeat lightly armored vehicles and other hard targets at close-combat ranges (Figure 11-9). Issued as a round of ammunition, it requires no maintenance. The improved M72 light antiarmor weapon systems offer significantly enhanced capability beyond that of the combat-proven M72A3. The improved M72 light antiarmor weapon system consists of an unguided high-explosive antiarmor rocket prepackaged in a telescoping, throw-away launcher. The system performance improvements include a higher velocity rocket motor that extends

the weapon effective range; increased lethality warheads; lower, more consistent trigger release force; rifle-type sight system; and better overall system reliability and safety. The improved M72 is transportable by tactical wheeled and tracked vehicles, without any safety constraints, and is air deliverable by individual parachutist or by pallet.

Caliber	66 mm
Weight	2.2 lb
Maximum effective range	220 meters
Minimum arming range	10 meters

Figure 11-9. Improved M72 light antiarmor weapon (LAW).

M136 AT4

The M136 AT4 is a lightweight, self-contained antiarmor weapon (Figure 11-10). It is man-portable and fires (only) from the right shoulder. The M136 AT4 is used primarily by Infantry forces to engage and defeat armor threats. The weapon accurately delivers a high-explosive antitank (HEAT) warhead with excellent penetration capability (more than fifteen inches of homogenous armor) and lethal after-armor effects. The weapon has a free-flight, fin-stabilized, rocket-type cartridge packed in an expendable, one-piece, fiberglass-wrapped tube.

Caliber	84 mm
Weight	4 lb
Maximum effective range	300 meters
Minimum arming range	15 meters

Figure 11-10. M136 AT4.

Note: Both the high-penetration (HP) and reduced-sensitivity (RS) versions of the AT4 confined space (CS) weapon offer improved safety. Unlike the original AT4, these models can be fired safely from within a room or other protected enclosure. They also have much less backblast and launch signature. Both the AT4 CS-HP and CS-RS consist of shock resistant, fiberglass-reinforced launching tubes fitted with firing mechanisms, pop-up sights, carrying slings, protective covers, and bumpers.

M141 BUNKER DEFEAT MUNITION (BDM)

A lightweight, self-contained, man-portable, high-explosive, disposable, shoulder-launched, multipurpose assault weapon-disposable (SMAW-D) that contains all gunner features and controls necessary to aim, fire, and engage targets (Figure 11-11). It can defeat fortified positions (bunkers) made of earth and timber; urban structures; and lightly armored vehicles. The M141 BDM is issued as an 83-mm, high-explosive, dual-mode, assault rocket round. It requires no maintenance. It fires (only) from the right shoulder. The weapon system structure consists of inner and outer filament-woven composite tubes, stored one inside the other to reduce carry length. Unlike the M136 AT4 launcher, the M141 BDM must be extended before firing.

Caliber	83 mm
Weight	15.7 lb
Maximum effective range	300 meters
Minimum arming range	15 meters

Figure 11-11. M141 bunker defeat munition (BDM).

JAVELIN

The Javelin is the first fire-and-forget, crew-served antitank missile (Figure 11-12). Its fire-and-forget guidance mode enables gunners to fire and then immediately take cover. This greatly increases survivability. The Javelin's two major components are a reusable command launch unit (CLU) and a missile sealed in a disposable launch tube assembly. The CLU's integrated daysight/nightsight allows target engagements in adverse weather and in countermeasure environments. The CLU may also be used by itself for battlefield surveillance and reconnaissance. Special features include a selectable top-attack or direct-fire mode (for targets under cover or for use in urban terrain against bunkers and buildings), target lock-on before launch, and a very limited backblast. These features allow gunners to fire safely from within enclosures and covered fighting positions. The Javelin can also be installed on tracked, wheeled, or amphibious vehicles.

Caliber	126 mm
Weight (missile+CLU)	49.5 lb
Maximum effective range	2,000 meters (direct and top-attack)
Minimum effective engagement range	
Direct attack	65 meters
Top attack	150 meters
Minimum enclosure	
Length	15 feet
Width	12 feet
Height	7 feet

Figure 11-12. Javelin.

FIRE CONTROL

Fire control includes all actions in planning, preparing, and applying fire on a target. Your leader selects and designates targets. He also designates the midpoint and flanks or ends of a target, unless they are obvious for you to identify. When firing, you should continue to fire until the target is neutralized or until signaled to do otherwise by your leader. The noise and confusion of battle will limit the use of some methods of control, so he will use the method, or combination of methods, that does the job.

WAYS TO COMMUNICATE FIRE CONTROL

The following paragraphs discuss methods to correspond fire control.

Sound Signals
This includes both voice and devices such as whistles. Sound signals are good only for short distances. Their range and reliability are reduced by battle noise, weather, terrain, and vegetation. Voice communications may come directly from your leader to you or they may be passed from soldier to soldier.

Trigger Points/Lines
This method is prearranged fire; your leader tells you to start firing once the enemy reaches a certain point or terrain feature. When using this method of fire control, you do not have to wait for an order to start firing. Prearranged fire can also be cued to friendly actions.

Visual Signals
In this method, your leader gives a prearranged signal when he wants you to begin, shift, and cease firing. This can be either a visual signal or a sound signal. Start firing immediately when you get the signal.

Time
You may be instructed to begin, shift, and cease firing at a set time. Additionally, soldier-initiated fire is used when there is no time to wait for orders from your leader.

Standing Operating Procedure (SOP)
Using an SOP can reduce the number of oral orders needed to control fire. However, everyone in the unit must know and understand the SOP for it to work. Three widely used SOP formats are the search-fire-check, return-fire, and rate-of-fire SOPs. Procedures for issuing fire commands for direct-fire weapons should also be covered in an SOP.

Search-Fire-Check SOP

1. Search your assigned sectors for enemy targets.
2. Fire at any targets (appropriate for your weapon) seen in your sectors.
3. While firing in your sectors, visually check with your leader for specific orders.

Return-Fire SOP
This SOP tells each soldier in a unit what to do in case the unit makes unexpected contact with the enemy (in an ambush, for example).

Rate-of-Fire SOP
This SOP tells each soldier how fast to fire at the enemy. The rate of fire varies among weapons, but the principle is to fire at a maximum rate when first engaging a target and then slow the rate to a point that will keep the target suppressed. This helps to keep weapons from running out of ammunition.

THREAT-BASED FIRE CONTROL MEASURES
The following paragraphs discuss threat-based fire control measures:

Engagement Priorities
Engagement priorities are the target types, identified by your leader, that offer the greatest payoff or present the greatest threat. He then establishes these as a unit engagement priority. Your leader refines these priorities within your unit, such as employing the best weapons for targets, as well as fire distribution.

Range Selection
Range selection is a means by which your leader will use his estimate of the situation to specify the range and ammunition for the engagement. Range selection is dependent on the anticipated engagement range. Terrain, visibility, weather, and light conditions affect range selection, and the amount and type of ammunition.

Weapons Control Status
The three levels of weapons control status outline the conditions, based on target identification criteria, under which friendly elements may engage. Your leader will set and adjust the weapons control status based on the friendly and enemy situation, and the clarity of the situation. The three levels, in descending order of restriction, follow:

- **WEAPONS HOLD:** Engage only if engaged or ordered to engage.
- **WEAPONS TIGHT:** Only engage targets that are positively identified as enemy.
- **WEAPONS FREE:** Engage any targets that are not positively identified as friendly.

Rules of Engagement (ROE)
ROE are the commander's rules for use of force and specify the circumstances and limitations in which you may use your weapon. They include definitions of combatant and noncombatant elements and prescribe the treatment of noncombatants. Factors influencing ROE are national command policy, the mission, operational environment, and the law of war.

COMBAT ZERO

Combat readiness makes it essential for you to zero your individual weapon whenever it is issued. Additionally, each rifle in the unit arms room, even if unassigned, should be zeroed by the last soldier it was assigned to. For more detailed information see FM 3-22.9 (*Rifle Marksmanship M16-/M4-Series Weapons*).

Note: Only the M16/M4-series weapons will be discussed for zeroing procedures and aided-vision device combinations. For other weapons such as M249 SAW and the M240B, see the appropriate field manuals (FMs).

MECHANICAL ZERO

Mechanical zero is the process of alignment of the weapons sighting systems to a common start point. Conduct the following procedures for these specific weapons:

M16A2/A3
Numbers in parentheses refer to the callouts in Figure 11-13.

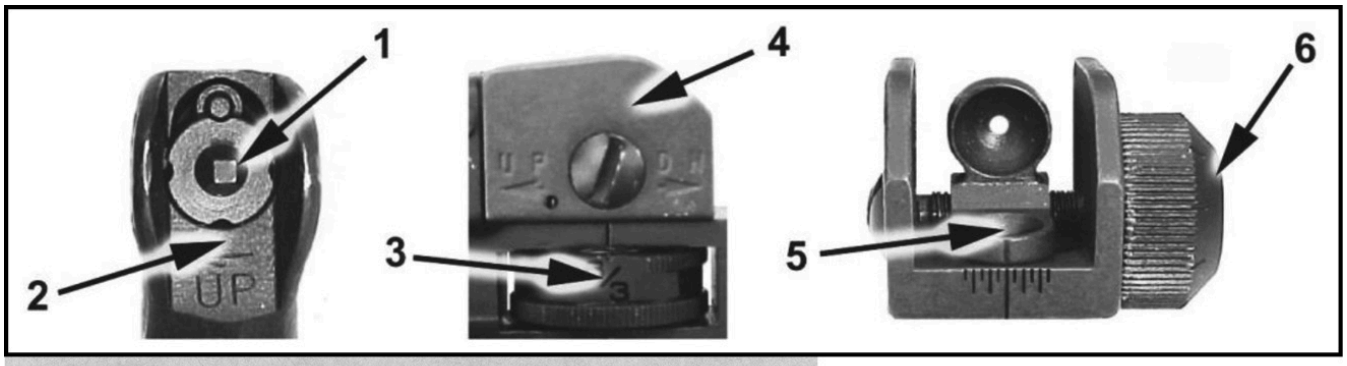


Figure 11-13. M16A2/A3 rifle mechanical zero.

1. Adjust the front sight post (1) up or down until the base of the front sight post is flush with the front sight post housing (2).
2. Adjust the elevation knob (3) counterclockwise, as viewed from above, until the rear sight assembly (4) rests flush with the carrying handle and the 8/3 marking is aligned with the index line on the left side of the carrying handle.
3. Position the apertures (5) so the unmarked aperture is up and the 0 to 200 meter aperture is down. Rotate the windage knob (6) to align the index mark on the 0 to 200 meter aperture with the long center index line on the rear sight assembly.

M16A4 AND M4 CARBINE

Numbers in parentheses refer to the callouts in Figure 11-14.

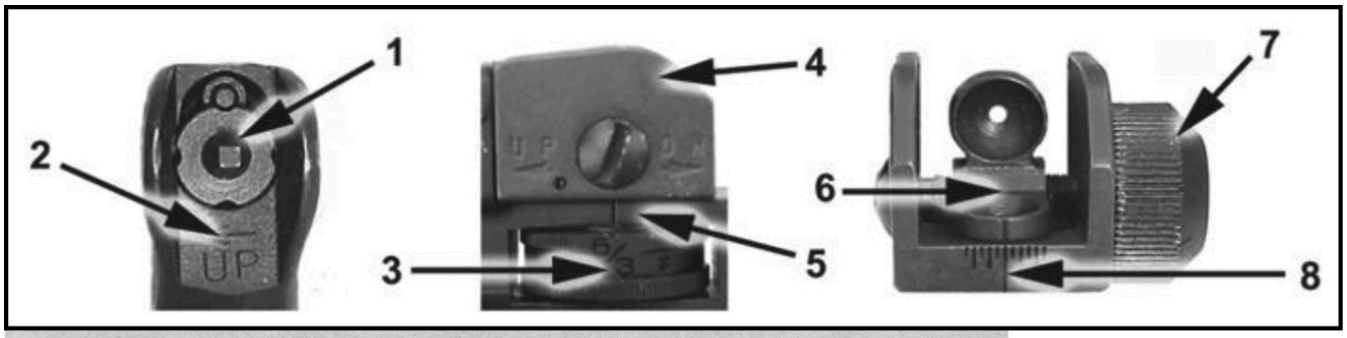


Figure 11-14. M16A4 and M4 carbine rifle mechanical zero.

1. Adjust the front sight post (1) up or down until the base of the front sight post is flush with the front sight post housing (2).
2. Adjust the elevation knob (3) counterclockwise, when viewed from above, until the rear sight assembly (4) rests flush with the detachable carrying handle and the 6/3 marking is aligned with the index line (5) on the left side of the carrying handle.

3. Position the apertures (6) so the unmarked aperture is up and the 0 to 200 meter aperture is down. Rotate the windage knob (7) to align the index mark (8) on the 0 to 200 meter aperture with the long center index line on the rear sight assembly.

BATTLESIGHT ZERO

Battlesight zero is the alignment of the sights with the weapon's barrel given standard-issue ammunition. It provides the highest probability of hitting most high-priority combat targets with minimum adjustment to the aiming point 300-meter sight setting as on the M16A2/3/4 and M4 series weapons. For each of the following weapons, ensure the rear sights are set for battlesight zero (25-meter zero):

M16A2/A3
Numbers in parentheses refer to the callouts in Figure 11-15.

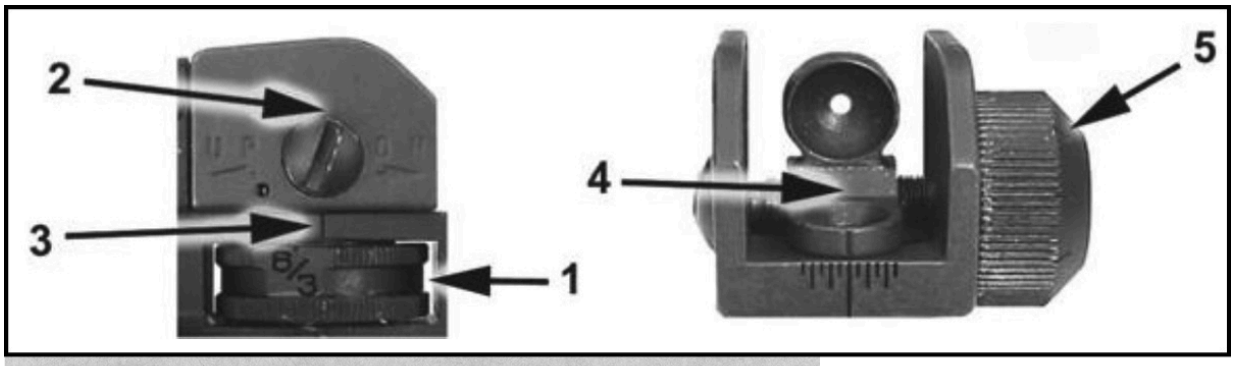


Figure 11-15. M16A2/A3 rifle battlesight zero.

1. Adjust the elevation knob (1) counterclockwise, as viewed from above, until the rear sight assembly (2) rests flush with the carrying handle and the 8/3 marking is aligned with the index line (3) on the left side of the carrying handle. Then, turn the elevation knob one more click clockwise.
2. Position the apertures (4) so the unmarked aperture is up and the 0 to 200 meter aperture is down. Rotate the windage knob (5) to align the index mark on the 0 to 200 meter aperture with the long center index line on the rear sight assembly.

M16A4
Numbers in parentheses refer to the callouts in Figure 11-16.

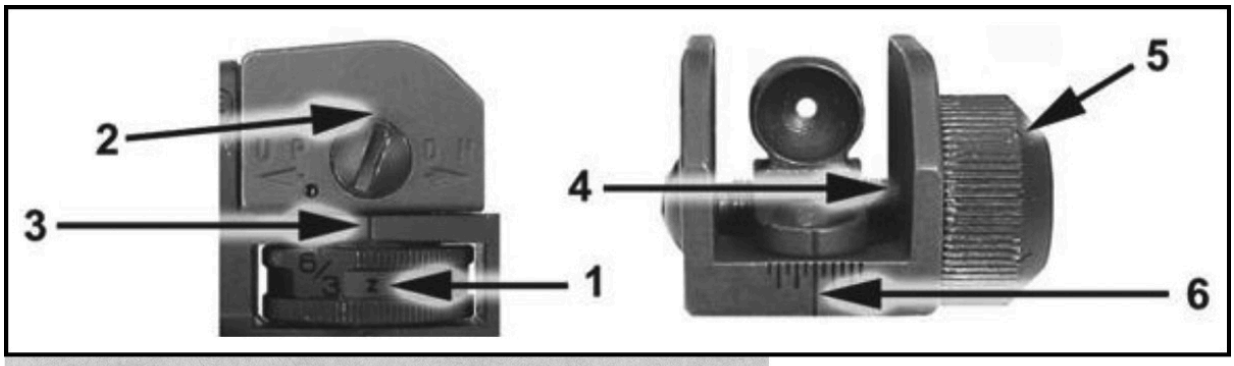


Figure 11-16. M16A4 rifle battlesight zero.

1. Adjust the elevation knob (1) counterclockwise, when viewed from above, until the rear sight assembly (2) rests flush with the detachable carrying handle and the 6/3 marking is aligned with the index line (3) on the left side of the detachable carrying handle. To finish the procedure, adjust the elevation knob two clicks clockwise so the index line on the left side of the detachable carrying handle is aligned with the "Z" on the elevation knob.
2. Position the apertures (4) so the unmarked aperture is up and the 0 to 200 meter aperture is down. Rotate the windage knob (5) to align the index mark on the 0 to 200 meter aperture with the long center index line (6) on the rear sight assembly.

M4

Numbers in parentheses refer to the callouts in Figure 11-17.

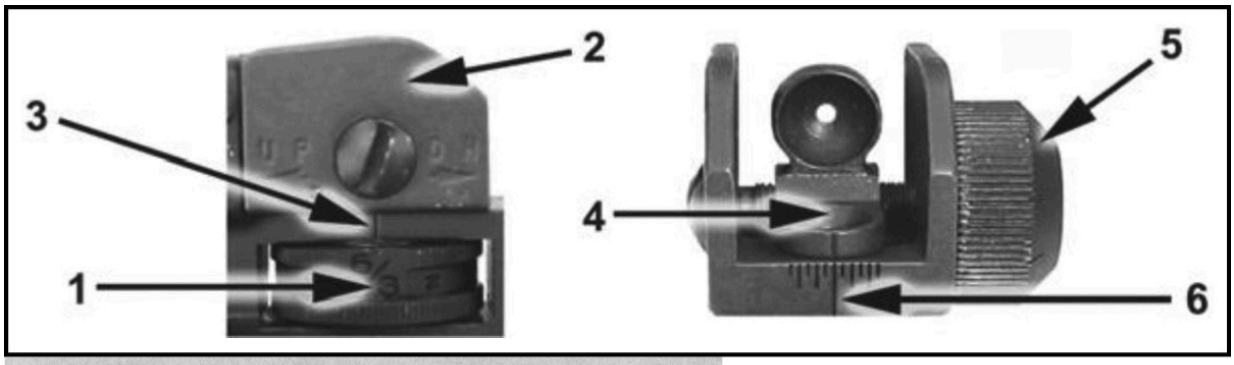


Figure 11-17. M4 rifle battlesight zero.

1. Adjust the elevation knob (1) counterclockwise, when viewed from above, until the rear sight assembly (2) rests flush with the detachable carrying handle and the 6/3 marking is aligned with the index line (3) on the left side of the detachable carrying handle. The elevation knob remains flush.

2. Position the apertures (4) so the unmarked aperture is up and the 0 to 200 meter aperture is down. Rotate the windage knob (5) to align the index mark (6) on the 0 to 200 meter aperture with the long center index line on the rear sight assembly.

SHOT GROUPS

To ensure proper and accurate shot-group marking—

1. Apply the four fundamentals of marksmanship deliberately and consistently. Establish a steady position allowing observation of the target. Aim the rifle at the target by aligning the sight system, and fire your rifle without disturbing this alignment by improper breathing or during trigger squeeze.
2. Initially, you should fire two individual shot groups before you consider changing the sight. Fire each shot at the same aiming point (center mass of the target) from a supported firing position. You will fire a three-round shot group at the 25-meter zero target.
3. You will triangulate each shot group and put the number "1" in the center of the first shot group and a number "2" on the second. Group the two shot groups and mark the center of the two shot groups with an X. If the two shot groups fall within a 4-centimeter circle, determine what sight adjustments need to be made, identify the closest horizontal and vertical lines to the X, and then read the 25-meter zero target to determine the proper sight adjustments to make. A proper zero is achieved if five out of six rounds fall within the 4-centimeter circle (Figure 11-18).

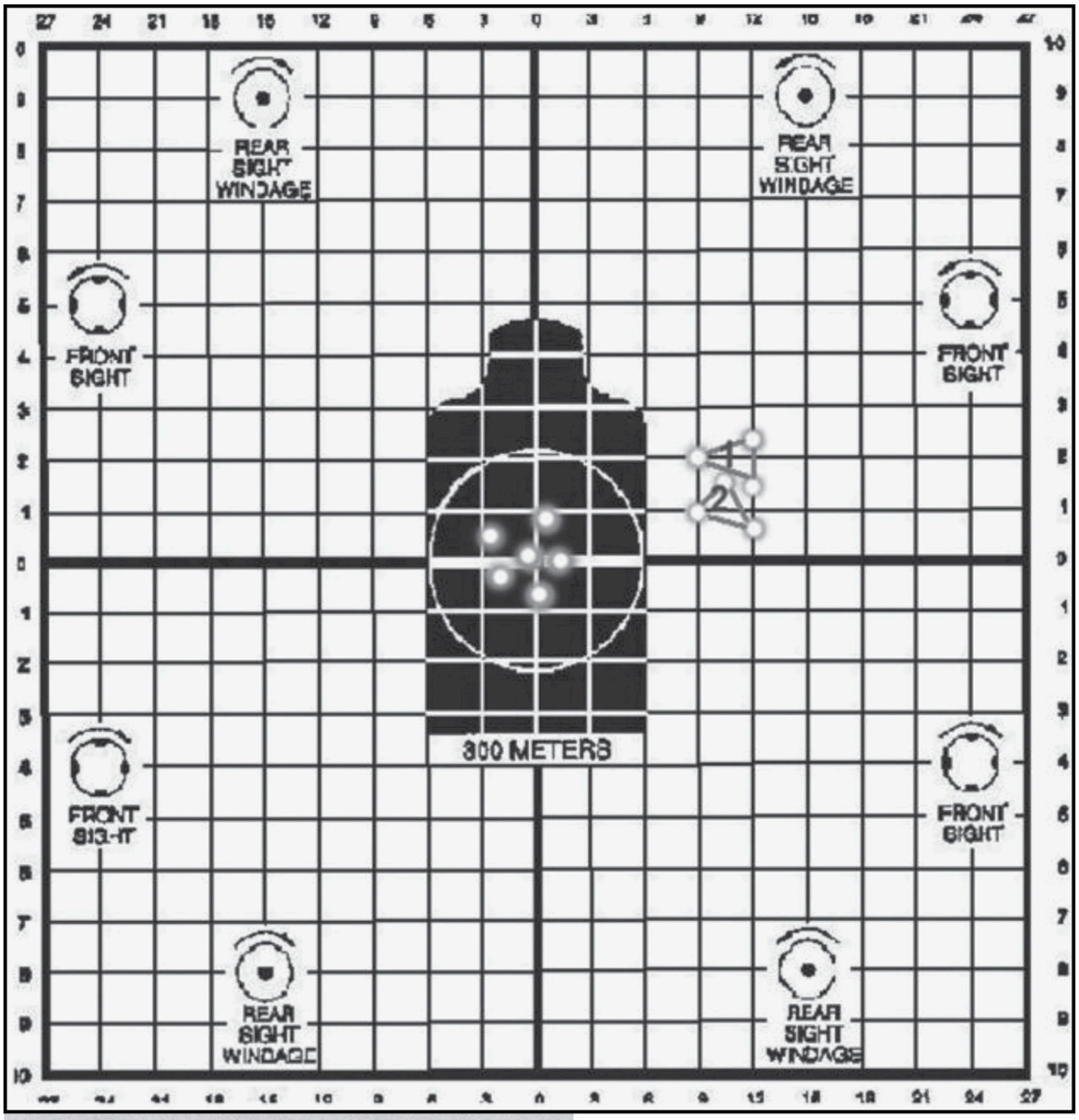


Figure 11-18. Final shot-group results.

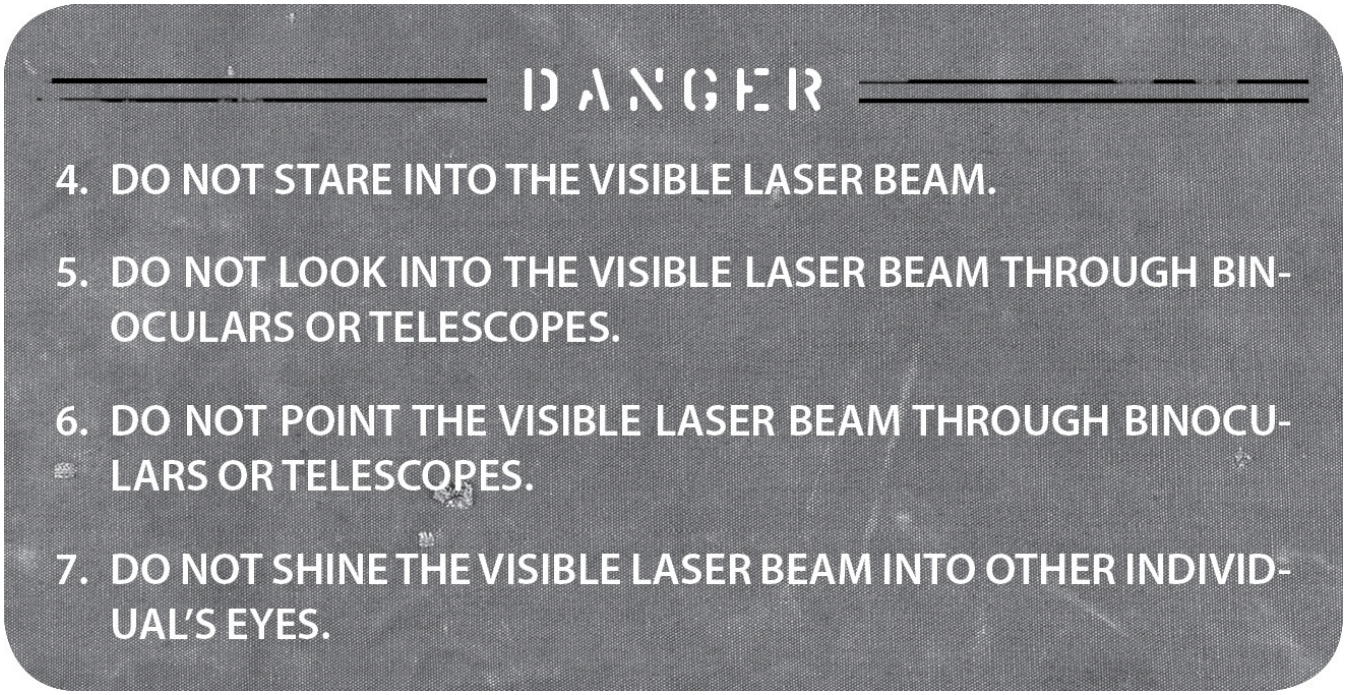
Note: The M16A2 zero target squares are .96 centimeter in size while the M4 zero target squares are 1.3 centimeters in size. Two single shots on a 25-meter zero target that are 2 centimeters apart does not equate to two squares from each other on the M4 zero target.

BORELIGHT ZERO

The borelight is an accurate means of zeroing weapons and most aided-vision equipment without the use of ammunition. Time and effort must be applied to ensure a precise boresight, which will in turn save time and ammunition. Both the M16A2 and the M4/MWS can be zeroed using the borelight and each of the following five aided-vision devices:

- Backup iron sight (which can also be boresighted).
- AN/PAQ-4B/C.
- AN/PEQ-2A.
- AN/PAS-13.
- M68 CCO.

Note: Precisely boresighting a laser allows direct engagement of targets without a 25-meter zero. If a borelight is unavailable, you must use a 25-meter zero to zero the device. All optics must be 25-meter zeroed. A borelight only aids in zeroing.



Boresighting is a simple procedure if the steps are strictly followed. The visible laser of the borelight must be aligned with the barrel of your assigned weapon. Then, using a 10-meter boresight target, the weapon can be boresighted with any optic, laser, or iron sight.

WARNING

8. Make sure the weapon is CLEAR and on SAFE before using the borelight.
9. Ensure the bolt is locked in the forward position.
10. When rotating the borelight to zero it, ensure the mandrel is turning counterclockwise (from the gunner's point of view) to avoid loosening the borelight from the mandrel.

Before you boresight your weapon, the borelight must first be zeroed to the weapon. To zero the borelight to the weapon, align the visible laser with the barrel of the weapon. Stabilizing the weapon is crucial. The weapon can be stabilized in a rifle box rest or in a field location by laying two rucksacks side by side. Lay the weapon on the rucksacks and then lay another rucksack on top of the weapon to stabilize it.

ZEROING THE BORELIGHT

WARNING

★ Avoid overadjusting the laser or pointing it at other soldiers or reflective material.

The weapon need not be perfectly level with the ground during boresighting. Conduct the following steps to zero the borelight:

1. Attach the 5.56-mm mandrel to the borelight.
2. Insert the mandrel into the muzzle of the weapon. The borelight is seated properly when the mandrel cannot be moved any farther into the muzzle and the mandrel spins freely. Stabilize the weapon so it will not move.
3. Measure 10 meters with the 10-meter cord that comes with the borelight or pace off eleven paces.

4. The zeroing mark is a small dot drawn on a piece of paper, tree bark, or the borelight reference point (RP) on the 10-meter borelight target (Figure 11-19).

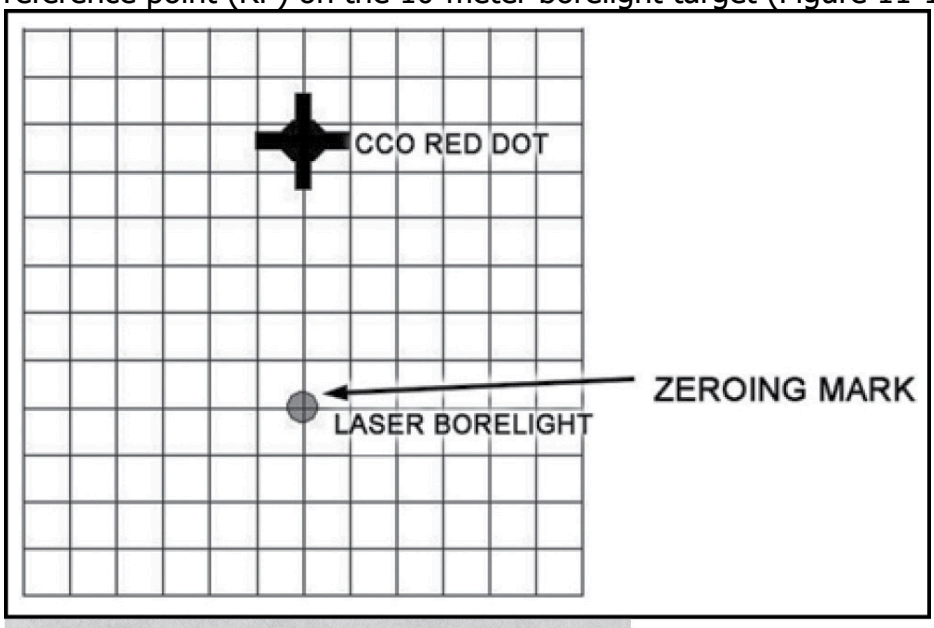


Figure 11-19. Example zeroing mark.

5. Rotate the borelight until the battery compartment is facing upward and the adjusters are on the bottom (Figure 11-20). This position of the borelight, and where the visible laser is pointing, is the start point.

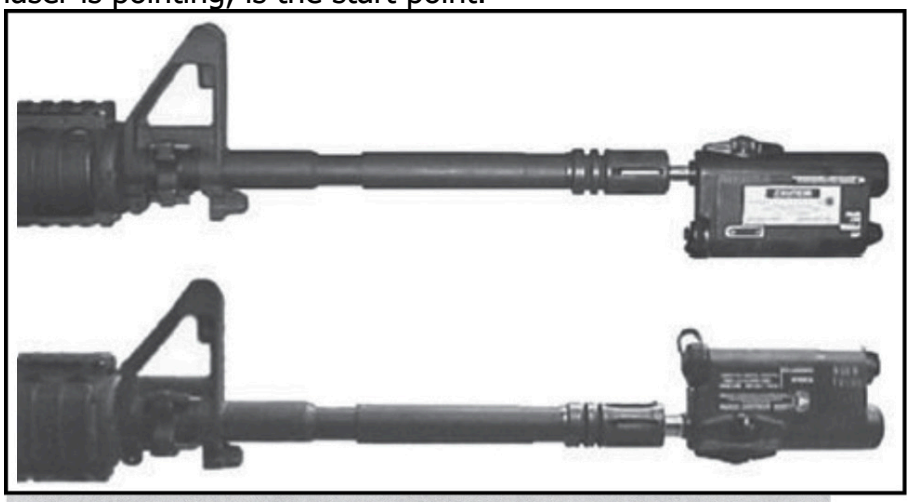


Figure 11-20. Borelight in the start point position.

6. Rotate the borelight until the battery compartment is down and the adjusters are on top to allow for easy access to the adjusters (Figure 11-21). This position of the borelight, and where the visible laser is pointing, is identified as the half-turn position.

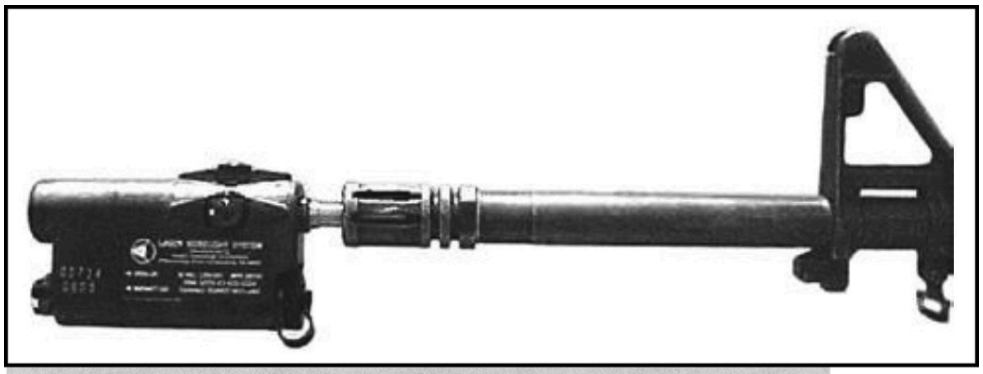


Figure 11-21. Borelight in the half-turn position.

Note: Use the commands START POINT and HALF TURN to ensure clear communication between you and your buddy/assistant at the boresight target.

7. The RP is about halfway between the start point and the half-turn point (Figure 11-22).

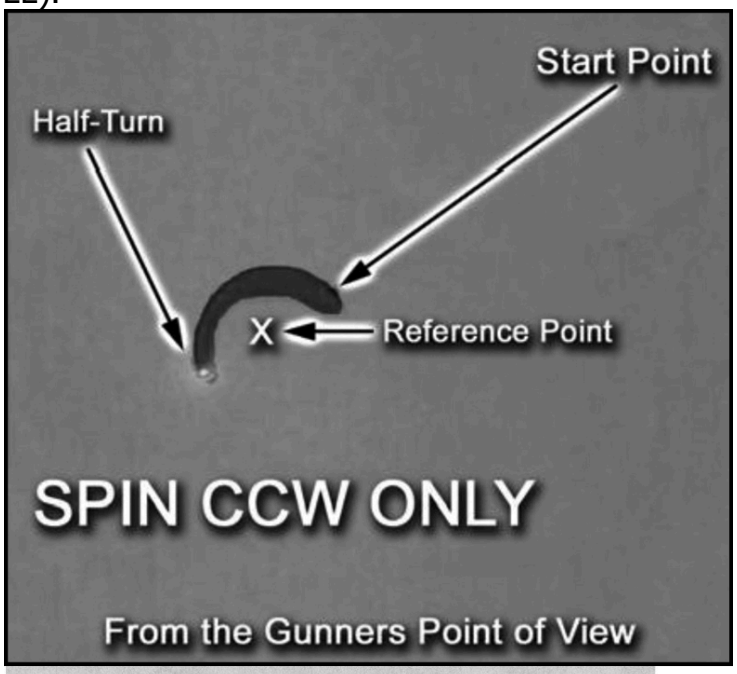


Figure 11-22. Examples of start point, half-turn, and reference point.

8. Turn the borelight on and spin it until it is in the start point position. Place the zeroing mark about 10 meters from the end of the barrel so that the visible laser strikes the zeroing mark.
9. Slowly rotate the borelight 180 degrees while watching the visible laser made by the borelight. If the visible laser stops on the zeroing mark, the borelight is zeroed to the weapon.
10. If the borelight does not stop on the zeroing mark, elevation and windage adjustments must be made to the borelight.
11. From the start point, realign the zeroing mark with the visible laser, rotate the borelight 180 degrees to the half-turn position, and identify the RP. Using the

adjusters on the borelight, move the visible laser to the RP. Rotate the borelight back to the start point; move the zeroing mark to the visible laser. If the visible laser cannot be located when you spin the borelight to the half-turn position, start this procedure at 2 meters instead of 10 meters. When the visible laser is adjusted to the RP at 2 meters, then start the procedure again at 10 meters.

12. Repeat Step 11 above until the visible laser spins on itself.

Note: Every barrel is different; therefore, steps (8) through (10) must be performed with every weapon to ensure that the borelight is zeroed to that barrel. If the borelight is zeroed, then go directly to the boresighting procedures.

During boresighting, your weapon should be in the "bolt forward" position and must not be canted left or right. As a firer, you will need a target holder in order to properly boresight a weapon. The duties follow:

1. The firer's primary duty is to zero the borelight and make all adjustments on the aided-vision device being used.
2. The target holder secures the 10-meter (1-centimeter square grid) boresight target (Figure 11-23) straight up and down 10 meters from the borelight, and directs the firer in making necessary adjustments to the aiming device. The target holder must wear NVGs when boresighting IR-aiming lasers.

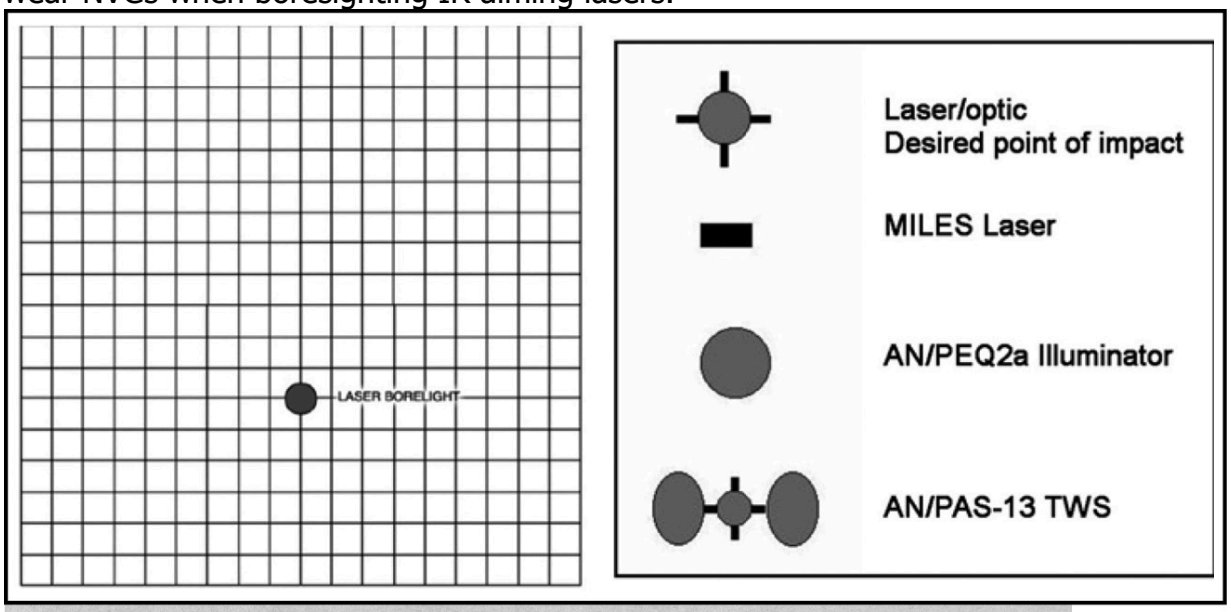


Figure 11-23. Blank 10-meter boresight target and offset symbols.

BORESIGHTING THE BACKUP IRON SIGHT

The backup iron sight (BIS) can be boresighted to a new user to expedite 25-meter zeroing (Figure 11-24). To boresight using the BIS, align the iron sights with the Canadian bull on the 10-meter boresight target. Adjust the windage and elevation of the iron sights until the borelight is centered with the circle on the boresight target.

Figure 11-24. Backup iron sight.

The BIS is adjusted for a 300-meter battlefield zero to provide backup in the event an optic or laser device fails to function. The BIS is zeroed on the M4/M4A1 target on the backside of the M16A2 zero targets. The 25-meter zeroing procedures are the same as for conventional rear sight assembly on the M16-/M4-series weapons.

BORESIGHTING THE M68 CLOSE COMBAT OPTIC (CCO)

The M68 CCO is a reflex (nontelescopic) sight (Figure 11-25). It uses a red-aiming reference (collimated dot) and is designed for the sighting with both eyes open. Position your head so that one eye can focus on the red dot and the other eye can scan downrange. Place the red dot on the center of mass of the target and engage. With your nonfiring eye closed, look through the M68 to ensure you can see the red dot clearly. Place the red dot center mass of the target, and then engage. If you zero your weapon with the one-eye-open method, then you must engage targets using this method for zero accuracy. The dot follows the horizontal and vertical movement of your eye while remaining fixed on the target. No centering or focusing is required. The more accurately you boresight the M68 to your weapon, the closer it will be to a battlesight zero.

Figure 11-25. M68 close combat optic.

25-Meter Zero Procedure with Borelight

1. Select the proper 10-meter boresight target for your weapon and M68 configuration. With the help of an assistant, place the boresight target 10 meters in front of the weapon.
2. Turn the M68 to the desired setting (position number 4). Assume a stable supported firing position behind your weapon and look through the M68. Aim the red dot of the M68 on the crosshair of the 10-meter boresight target. Adjust the M68 until the borelight's visible laser centers on the borelight circle on the 10-meter boresight target.
3. Turn the borelight off. Move your weapon off the crosshair, realign the red dot of the M68 on the crosshair, and turn the borelight back on. If the borelight is on the circle and the red dot of the M68 is on the crosshair, your weapon system is now boresighted.

Note: The M68 is parallax free beyond 50 meters. Boresight at 10 meters. In order to get a solid boresight, acquire the same sight picture and cheek-to-stock weld position each time.

4. Turn the laser off. To avoid damaging the borelight device, carefully remove it, and the mandrel, from the weapon.

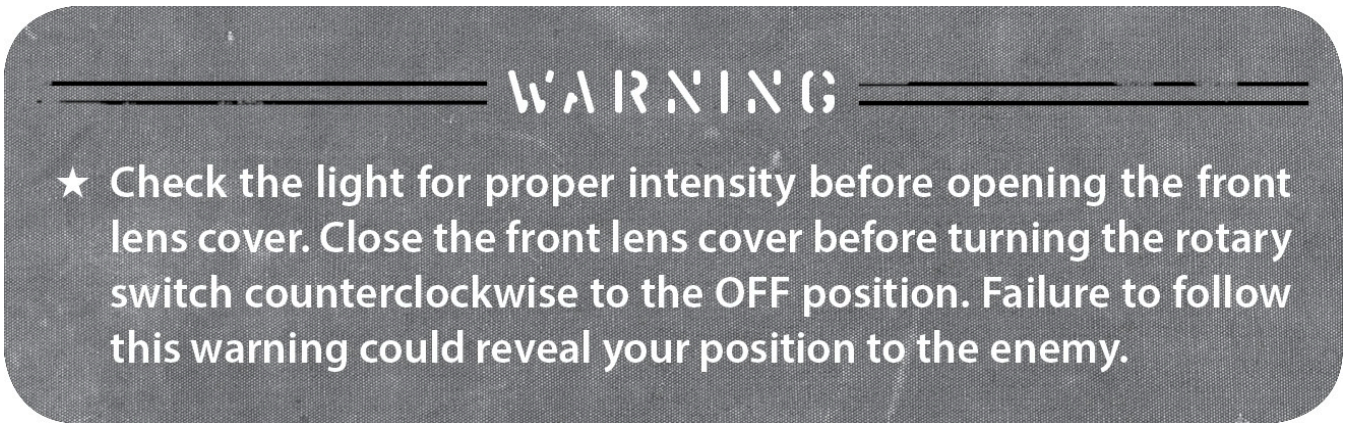
25-Meter Zero Procedure without Borelight

If the borelight is unavailable, conduct a 25-meter zero—

1. Use the same standards as with iron sights.

2. Starting from center mass of the 300-meter silhouette on the 25-meter zero target, count down 1.4 centimeters and make a mark. This is now the point of impact.
3. Make a 4-by-4 square box around the point of impact. This box is now the offset and is the designated point of impact for the M68.
4. Aim center mass of the 300-meter silhouette and adjust to the M68 so that the rounds impact in the 4-by-4 square box, 1.4 centimeters down from the point of aim.
    a. Two clicks = 1 cm at 25 m for windage and elevation.
    b. One click clockwise on elevation moves bullet strike down.
    c. One click clockwise on windage moves bullet strike left.
5. Zero only on the M16A2 25-meter zero target.

Note: At ranges of 50 meters and beyond, parallax is minimal. However, at ranges of 50 meters and closer, keep the red dot centered while zeroing. Use the same aiming method (one or both eyes open) for zeroing that you plan to use to engage targets.



BORESIGHTING AN/PAS-13 (V2) AND (V3) THERMAL WEAPON SIGHTS (TWS)

Boresight and zero both the narrow and wide field of views (FOVs). Zero at 25 meters to ensure you have zeroed the TWS properly:

1. Select the proper 10-meter boresight target for the weapon/TWS configuration and, with the help of an assistant, place the boresight target 10 meters in front of the weapon.
2. Ensure the M16/M4 reticle displays. Assume a stable supported firing position behind your weapon and look through the TWS.
3. Place a finger on each oval of the 10-meter boresight target. Aim between your fingers with the 300-meter aiming point. Adjust the TWS until the borelight's visible laser centers on the borelight circle's 10-meter boresight target.
4. Have gunner move off the aiming block, realign the TWS to the center of the heated block, and then turn the borelight back on. Ensure you still have the proper boresight alignment. Now you are boresighted.

5. Change the FOV on the sight by rotating the FOV ring, and repeat steps (1) through (4).
6. Turn the laser off. To avoid damaging the borelight device, carefully remove it and the mandrel from the weapon.

25- METER ZERO PROCEDURE

Ensure you zero both FOVs.

1. Use the same procedures and standards as with iron sights (Figure 11-26).

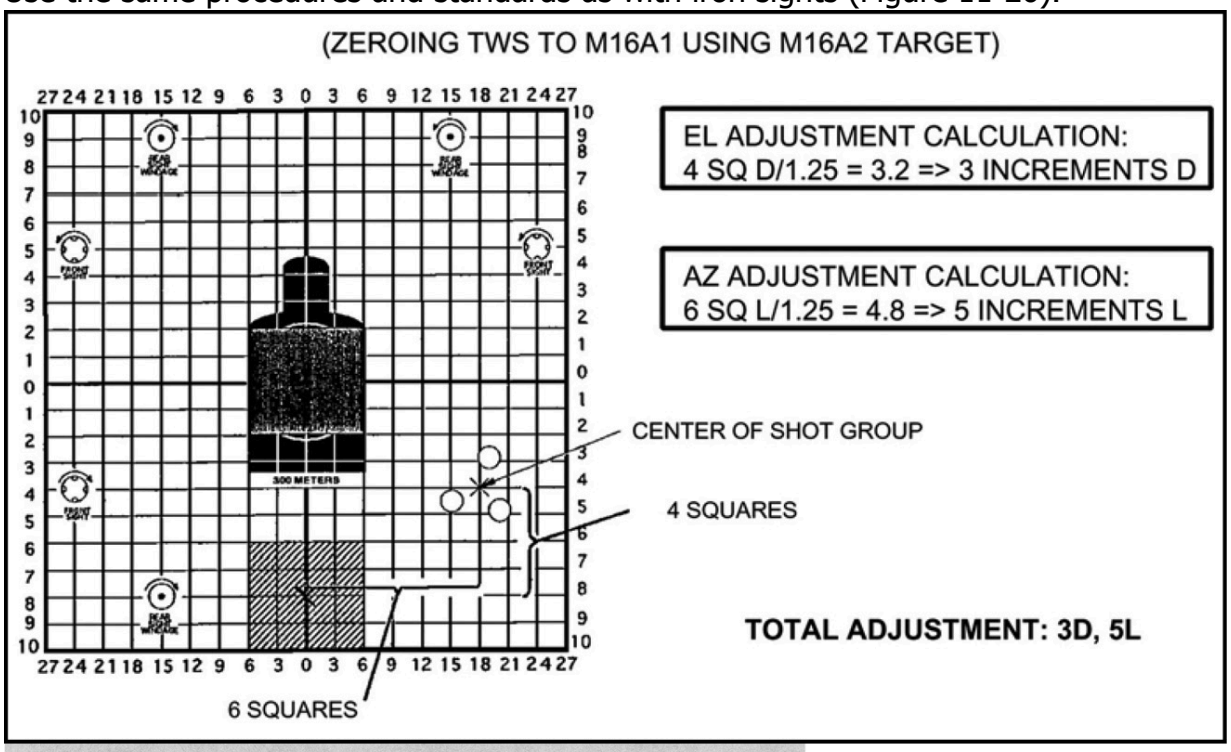


Figure 11-26. Example TWS zeroing adjustments.

2. At the 25-meter range, each increment of azimuth or elevation setting moves the strike of the round as follows:
    a. 1¼ centimeters for medium TWS on wide FOV.
    b. ¾ centimeter for medium weapon thermal sight (MWTS) on narrow FOV.
    c. ¾ centimeter for heavy TWS on wide FOV.
    d. ¼ centimeter for heavy TWS on narrow FOV.
3. Retighten the rail grabber after you fire the first three rounds.

BORESIGHTING AN/PAQ-4B/C

1. Select the proper 10-meter boresight target for the weapon-to-AN/PAQ-4B/C configuration and, with the help of an assistant, place the boresight target 10 meters in front of your weapon.
2. Install the borelight filter and turn on the AN/PAQ-4B/C. Align the 10-meter boresight target with the visible laser of the borelight.

3. Adjust the adjusters on the AN/PAQ-4B/C until the IR laser is centered on the crosshair located on the 10-meter boresight target.
    a. Keep the boresight target and zeroing mark stable during the boresight procedure.
    b. Do not turn the adjustment screws too much or they will break. Regardless of the mounting location, the adjuster that is on top or bottom will always be the adjuster for elevation and the one on the side will be the windage adjuster.
    c. Elevation adjustment screw—one click at 25 meters = 1 centimeter.
    d. Windage adjustment screw—one click at 25 meters = 1 centimeter.

25-METER ZERO PROCEDURES

If the borelight is unavailable, conduct a 25-meter zero (Figure 11-27) as follows:

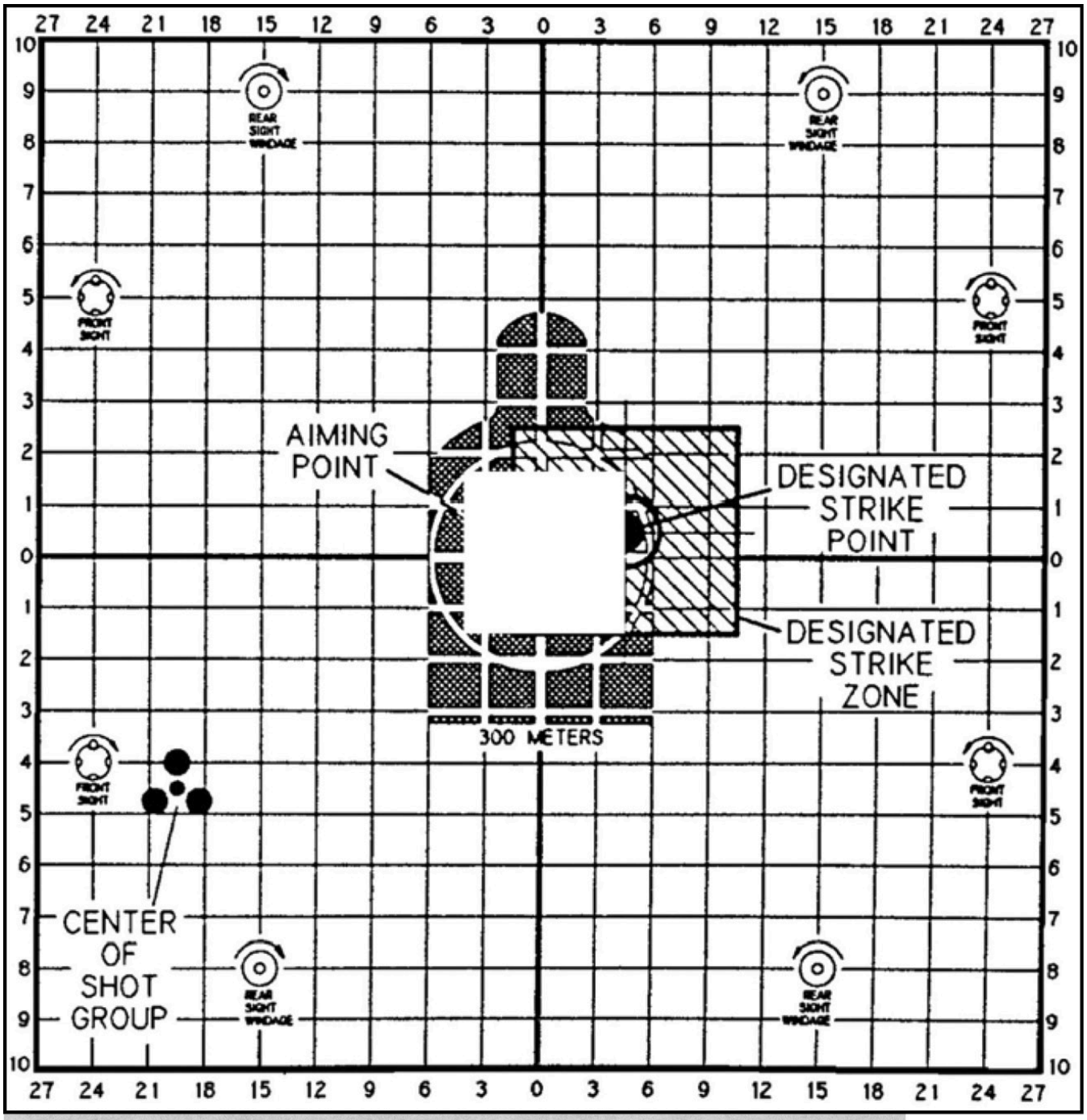


Figure 11-27. Example shot-group adjustment with strike zone.

1. Use the same standards as for the iron sights.
2. Preset the adjusters IAW TM 11-5855-301-12&P (*Operator's and Unit Maintenance Manual*).
3. Prepare 25-meter zero target by cutting a 3x3-centimeter square out of the center of the silhouette.
    a. *Elevation Adjustment Screw*—one click at 25 m = 1 cm (clockwise = up).

b. *Windage Adjustment Screw*—one click at 25 m = 1 cm (clockwise = left).

4. Retighten rail grabber after the first three rounds are fired.

Note: When cutting the 3-centimeter square out of the target, some of the strike zone may be cut out. Exercise care when annotating the impact of the rounds. When the weapon is close to being zeroed, some of the shots may be lost through the hole in the target.

BORESIGHTING AN/PEQ-2A

1. Select the proper 10-meter boresight target for the weapon and AN/PEQ-2A configuration and, with the help of an assistant, place the boresight target 10 meters in front of your weapon.
2. Install the filter on the aiming laser and turn on the AN/PEQ-2A. Align the 10-meter boresight target with the visible laser of the borelight.
3. Adjust the adjusters on the AN/PEQ-2A until the IR laser centers on the crosshair located on the 10-meter boresight target.
4. Adjust the illuminator in the same manner.
5. Turn the laser off. To avoid damaging the borelight device, carefully remove the borelight and the mandrel from the weapon.
    a. Each click of elevation and windage is 1 centimeter. For ease, round up one square. However, each square of the 25-meter zero target is 0.9 centimeter, which affects large adjustments.
    b. Do not turn the adjustment screws too much, or they will break. Regardless of the mounting location, the adjuster that is on top or bottom will always be the adjuster for elevation and the one on the side will be the windage adjuster.

25-METER ZERO PROCEDURES

If a borelight is unavailable, you must conduct a 25-meter zero:

1. Follow the same standards as you did with iron sights.
2. Preset the adjusters IAW TM 11-5855-308-12&P (*Operator's and Unit Maintenance Manual*).
3. Prepare the 25-meter zero target by cutting out a 3x3-centimeter square in the center of the target and E-type silhouette.
4. Turn the aiming beam on in the low power setting (AIM LO). Install aim point filter to eliminate excessive blooming. The adjustments for the AN/PEQ-2A (top mounted) follow:

Aiming Point

Elevation Adjustment Screw—One click at 25 m = 1 cm or one square (clockwise = up).

Windage Adjustment Screw—One click at 25 m = 1 cm or one square (clockwise = right).

Target Illuminator

Elevation Adjustment Screw—One click at 25 m = 1 cm or one square (clockwise = down).

Windage Adjustment Screw—One click at 25 m = 1 cm or one square (clockwise = right).

5. Retighten rail grabber and AN/PEQ-2A.
6. Once you have zeroed the aiming beam, rotate the selector knob to the DUAL LO, DUAL LO/HI, or DUAL HI/HI mode, and observe both aiming and illumination beams. Rotate the illumination beam adjusters to align the illumination beam with the aiming beam.

Note: To ensure zero retention—

1. Ensure you fully tighten the mounting brackets and the AN/PEQ-2A thumbscrew *prior* to zeroing.
2. Remove the TPIAL and rail grabber as a whole assembly, and then place it back onto the same notch.

MISFIRE PROCEDURES AND IMMEDIATE ACTION

MISFIRE

A misfire is the failure of a chambered round to fire. Ammunition defects and faulty firing mechanisms can cause misfires.

STOPPAGE

A stoppage is a failure of an automatic or semiautomatic firearm to complete the cycle of operation. You may apply immediate or remedial action to clear the stoppage. Some stoppages cannot be cleared by immediate or remedial action and may require weapon repair to correct the problem. Immediate action involves quickly applying a possible correction to reduce a stoppage without looking for the actual cause. Remedial action is the action taken to reduce a stoppage by looking for the cause and to try to clear the stoppage once it has been identified. To reduce a stoppage—

M9 Pistol

Immediate Action

Immediate action is taken within fifteen seconds of a stoppage.

1. Ensure the decocking/safety lever is in the FIRE position.
2. Squeeze the trigger again.
3. If the pistol does not fire, ensure the magazine is fully seated, retract the slide to the rear, and release.
4. Squeeze the trigger.
5. If the pistol does not fire again, remove the magazine and retract the slide to eject the chambered cartridge. Insert a new magazine, retract the slide, and release to chamber another cartridge.
6. Squeeze the trigger.
7. If the pistol still does not fire, perform remedial action.

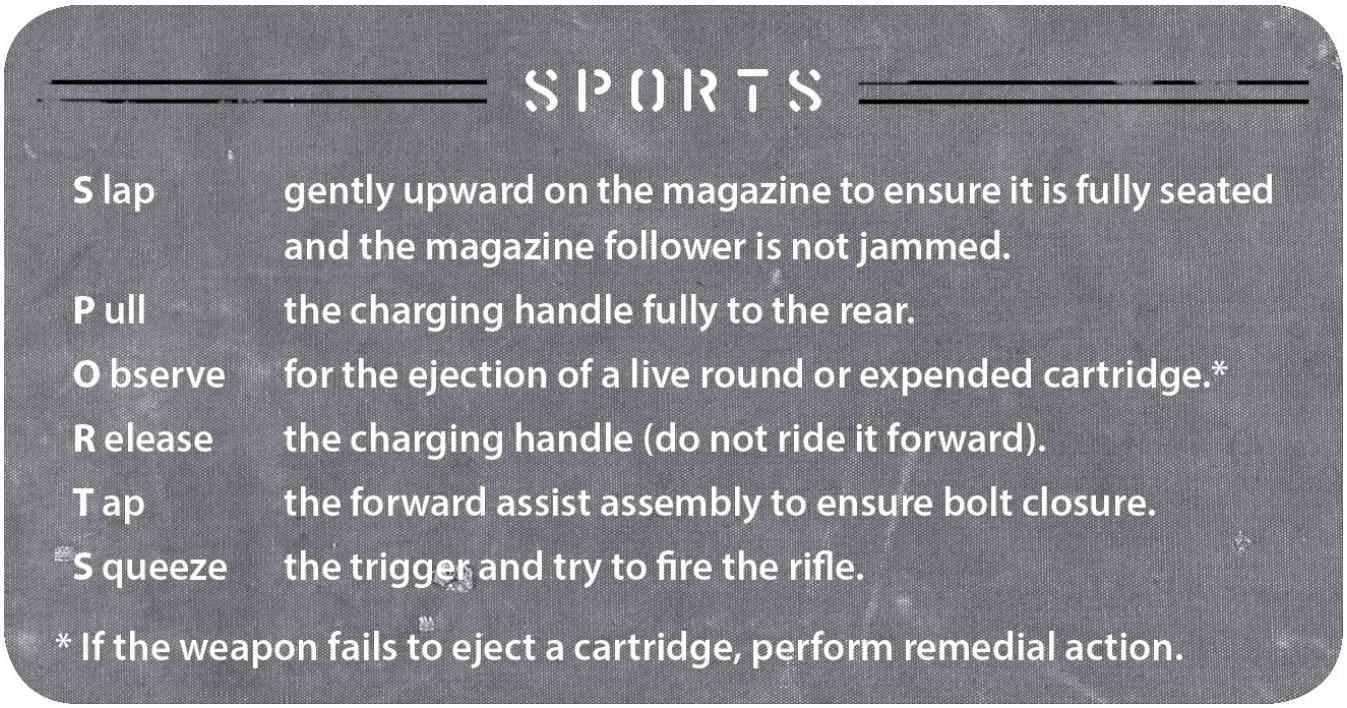
Remedial Action

Remedial action is taken to reduce a stoppage by looking for the cause.

1. Clear the pistol.
2. Inspect the pistol for the cause of the stoppage.
3. Correct the cause of the stoppage, load the pistol, and fire.
4. If the pistol fails to fire again, disassemble it for closer inspection, cleaning, and lubrication.

M16A2/3/4 and M4 Carbine Rifles

Immediate Action
Use the key word SPORTS to help you remember the steps to apply immediate action:



Remedial Action
To apply the corrective steps for remedial action, first try to place the weapon on SAFE, then remove the magazine, lock the bolt to the rear, and place the weapon on SAFE.

M249 SAW and M240B Machine Guns

Immediate Action
If either weapon stops firing, the same misfire procedures will apply for both. You will use the keyword POPP, which will help you remember the steps in order. While keeping the weapon on your shoulder, **P**ull and lock the charging handle to the rear while **O**bserving the ejection port to see if a cartridge case, belt link, or round is ejected. Ensure the bolt remains to the rear to prevent double feeding if a round or cartridge case is not ejected. If a cartridge case, belt link, or round is ejected, **P**ush the charging handle to its forward position, take aim on the target, and **P**ress the trigger. If the weapon does not fire, take remedial action. If a cartridge case, belt link, or round is not ejected, take remedial action.

Remedial Action
If immediate action does not remedy the problem, the following actions may be necessary to restore the weapon to operational condition:

Cold Weapon Procedures
When a stoppage occurs with a cold weapon, and if immediate action has failed—

1. While in the firing position, grasp the charging handle with your right hand, palm up; pull the charging handle to the rear, locking the bolt. While keeping resistance on the charging handle, move the safety to SAFE and return the cocking handle.
2. Place the weapon on the ground or away from your face. Open the feed cover and perform the five-point safety check. Reload and continue to fire.
3. If the weapon fails to fire, clear it and inspect the weapon and the ammunition.

Hot Weapon Procedures
If the stoppage occurs with a hot weapon (200 or more rounds in less than 2 minutes, or as noted previously for training)—

1. Move the safety to SAFE and wait 5 seconds. During training, let the weapon cool for 15 minutes.
2. Use Cold Weapon Procedures 1 through 3 above.

Jammed Charging Handle
If a stoppage occurs and the charging handle cannot be pulled to the rear by hand (the bolt may be fully forward and locked or only partially forward), take the following steps:

1. Try once again to pull the charging handle by hand.
2. If the weapon is hot enough to cause a cook-off, move all soldiers a safe distance from the weapon and keep them away for 15 minutes.
3. After the gun has cooled, open the cover and disassemble the gun. Ensure rearward pressure is kept on the charging handle until the buffer is removed. (The assistant gunner can help you.)
4. Remove the rounds or fired cartridges. Use a cleaning rod or ruptured cartridge extractor if necessary.
    a. In a training situation, after completing the remedial action procedures, do not fire the gun until an ordnance specialist has conducted an inspection.
    b. In a combat situation, after the stoppage has been corrected, you may change the barrel and try to fire. If the weapon fails to function properly, send it to the unit armorer.

REFLEXIVE FIRE

Reflexive fire is the automatic trained response to fire your weapon with minimal reaction time. Reflexive shooting allows little or no margin for error. Once you master these fundamentals, they will be your key to survival on the battlefield:

- Proper firing stance.
- Proper weapon ready position.
- Aiming techniques.
- Aim point.
- Trigger manipulation.

PROPER FIRING STANCE

Regardless of the ready position used, always assume the correct firing stance to ensure proper stability and accuracy when engaging targets. Keep your feet about shoulder-width apart. Toes are pointed straight to the front (direction of movement). The firing-side foot is slightly staggered to the rear of the nonfiring-side foot. Knees are slightly bent and the upper body is leaned slightly forward. Shoulders are square and pulled back, not rolled over or slouched. Keep your head up and both eyes open. When engaging targets, hold the weapon with the butt of the weapon firmly against your shoulder and the firing-side elbow close against the body.

PROPER WEAPON READY POSITION

The two weapon ready positions are the high ready and low ready (Figure 11-28).

Figure 11-28. Ready positions.

Low Ready Position—Place the butt of the weapon firmly in the pocket of your shoulder with the barrel pointed down at a 45-degree angle. With your nonfiring hand, grasp the

handguards toward the front sling swivel, with your trigger finger outside the trigger well, and the thumb of your firing hand on the selector lever. To engage a target from this position, bring your weapon up until you achieve the proper sight picture. This technique is best for moving inside buildings.

High Ready Position—Hold the butt of the weapon under your armpit, with the barrel pointed slightly up so that the top of the front sight post is just below your line of sight, but within your peripheral vision. With your nonfiring hand, grasp the handguards toward the front sling swivel. Place your trigger finger outside the trigger well, and the thumb of your firing hand on the selector lever. To engage a target from this position, just push the weapon forward as if to bayonet the target and bring the butt stock firmly against your shoulder as it slides up your body. This technique is best suited for the line-up outside of a building, room, or bunker entrance.

AIMING TECHNIQUES

The four aiming techniques with iron sights all have their place during combat in urban areas, but the aimed quick-kill technique is often used in precision room clearing. You need to clearly understand when, how, and where to use each technique.

Slow Aimed Fire—This technique is the slowest but most accurate. Take a steady position, properly align your sight picture, and squeeze off rounds. Use this technique only to engage targets beyond 25 meters when good cover and concealment is available, or when your need for accuracy overrides your need for speed.

Rapid Aimed Fire—This technique uses an imperfect sight picture. Focus on the target and raise your weapon until the front sight post assembly obscures the target. Elevation is less critical than windage when using this technique. This aiming technique is extremely effective on targets from 0 to 15 meters away and at a rapid rate of fire.

Aimed Quick Kill—The aimed quick-kill technique is the quickest and most accurate method of engaging targets up to 12 meters and greater. When using this technique, you must aim over the rear sight, down the length of the carry handle, and place the top ½ to ¾ of an inch of the front sight post assembly on the target.

Instinctive Fire—This is the least accurate technique and should be used only in emergencies. It relies on your instinct, experience, and muscle memory. In order to use this technique, first concentrate on the target and point your weapon in the general direction of the target. While gripping the handguards with your nonfiring hand, extend your index finger to the front, automatically aiming the weapon on a line towards the target.

AIM POINT

Short-range engagements fall into two categories based on the mission and hostile threat.

Lethal Shot Placement—The lethal zone of the target is center mass between the waist and the chest. Shots in this area maximize the hydrostatic shock of the round.

Incapacitating Shot Placement—The only shot placement that guarantees immediate and total incapacitation is one roughly centered in the face. Shots to the side of the head should be centered between the crown of the skull and the middle of the ear opening, and from the center of the cheekbones to the middle of the back of the head.

TRIGGER MANIPULATION

Due to the reduced reaction time, imperfect sight picture, and requirement to effectively place rounds into threat targets, you must fire multiple rounds during each engagement in order to

survive. Multiple shots may be fired using the controlled pair, automatic weapons fire, and the failure drill methods.

Controlled Pair—Fire two rounds in rapid succession. When you fire the first, let the shot move the weapon in its natural arc and do not fight the recoil. Rapidly bring the weapon back on target and fire the second round. Fire controlled pairs at an individual target until he goes down. When you have multiple targets, fire a controlled pair at each target and then reengage any targets left standing.

Automatic Fire—You might need automatic weapons fire to maximize violence of action or when you need fire superiority to gain a foothold in a room, building, or trench. You should be able to fire six rounds (two three-round bursts) in the same time it takes to fire a controlled pair. The accuracy of engaging targets can be equal to that of semiautomatic fire at 10 meters.

Failure Drill—To make sure a target is completely neutralized, you will need to be trained to execute the failure drill. Fire a controlled pair at the lethal zone of the target, and then fire a single shot to the incapacitating zone. This increases the probability of hitting the target with the first shot, and allows you to incapacitate him with the second shot.

CHAPTER 12
COMMUNICATIONS

Command and control is a vital function on the battlefield. Effective communications are essential to command and control. Information exchanged by two or more parties must be transmitted, received, and understood. Without it, units cannot maneuver effectively and leaders cannot command and control their units, which may result in lives being lost on the battlefield. The user must understand the equipment and employ it effectively and within its means.

SECTION I. MEANS OF COMMUNICATIONS

Each of the several means of communication has its own advantages and disadvantages (Table 12-1).

Method	*Advantages*	*Disadvantages*
Messengers	• Messengers are the most secure means of communication. • Messengers can hand carry large maps with overlays. • Messengers can deliver supplies along with messages. • Messengers are flexible (can travel long/short distances by foot or vehicle).	• Messengers are slow, especially if traveling on foot for a long distance. • Messengers might be unavailable, depending on manpower requirements (size of element delivering message). • Messengers can be captured by enemy.
Wire	• Wire reduces radio net traffic. • Wire reduces electromagnetic signature. • Wire is secure and direct. • Wire can be interfaced with a radio.	• Wire has to be carried (lots of it). • Wire must be guarded. • Wire is time consuming.
Visual Signals	• Visual signals aid in identifying friendly forces. • Visual signals allow transmittal of prearranged messages. • Visual signals are fast. • Visual signals provide immediate feedback.	• Visual signals can be confusing. • Visual signals are visible from far away. • The enemy might see them, too.
Sound	• Sound can be used to attract attention. • Sound can be used to transmit prearranged messages. • Sound can be used to spread alarms. • Everyone can hear it at once. • Sound provides immediate feedback.	• The enemy hears it also. • Sound gives away your position.
Radio	• Radios are the most frequently used means of communication. • Radios are fast. • Radios are light. • Radios can be interfaced with telephone wire.	• Radio is the least secure means of communication. • Radios require batteries. • Radios must be guarded or monitored.

Table 12-1. Comparison of communication methods.

MESSENGERS

ADVANTAGES

- Messengers are the most secure means of communication.
- Messengers can hand carry large maps with overlays.
- Messengers can deliver supplies along with messages.

- Messengers are flexible (can travel long/short distances by foot or vehicle).

DISADVANTAGES

- Messengers are slow, especially if traveling on foot for a long distance.
- Messengers might be unavailable, depending on manpower requirements (size of element delivering message).
- Messengers can be captured by enemy.

WIRE

ADVANTAGES

- Wire reduces radio net traffic.
- Wire reduces electromagnetic signature.
- Wire is secure and direct.
- Wire can be interfaced with a radio.

DISADVANTAGES

- Wire has to be carried (lots of it).
- Wire must be guarded.
- Wire is time consuming.

VISUAL SIGNALS

ADVANTAGES

- Visual signals aid in identifying friendly forces.
- Visual signals allow transmittal of prearranged messages.
- Visual signals are fast.
- Visual signals provide immediate feedback.

DISADVANTAGES

- Visual signals can be confusing.
- The enemy might see them, too.
- Visual signals are visible from far away.

SOUND

ADVANTAGES

- Sound can be used to attract attention.
- Sound can be used to transmit prearranged messages.

- Sound can be used to spread alarms.
- Everyone can hear it at once.
- Sound provides immediate feedback.

DISADVANTAGES

- The enemy hears it also.
- Sound gives away your position.

RADIO

ADVANTAGES

- Radios are the most frequently used means of communication.
- Radios are fast.
- Radios are light.
- Radios can be interfaced with telephone wire.

DISADVANTAGES

- Radio is the least secure means of communication.
- Radios require batteries.
- Radios must be guarded or monitored.

SECTION II. RADIOTELEPHONE PROCEDURES

Radio, the least secure means of communication, speeds the exchange of messages and helps avoid errors. Proper radio procedures must be used to reduce the enemy's opportunity to hamper radio communications. Each time you talk over a radio, the sound of your voice travels in all directions. The enemy can listen to your radio transmissions while you are communicating with other friendly radio stations. You must always assume that the enemy is listening to get information about you and your unit, or to locate your position to destroy you with artillery fire.

RULES

Radio procedure rules, listed below, will help you use transmission times efficiently and avoid violations of communications.

- Prior to operation, assure equipment is properly configured. The technical manual (TM) is a good place to begin. Examples of items to check include tuning, power setting, and connections.
- Change frequencies and call signs in accordance with (IAW) unit signal operating instructions (SOI).
- Use varied transmission schedules and lengths.

- Use established formats to expedite transmissions such as sending reports.
- Encode messages or use secure voice.
- Clarity of radio communications varies widely, so use the phonetic alphabet and numbers.
- Transmit clear, complete, and concise messages. When possible, write them out beforehand.
- Speak clearly, slowly, and in natural phrases as you enunciate each word. If a receiving operator must write the message, allow time for him to do so.
- Listen before transmitting to avoid interfering with other transmissions.
- Long messages risk becoming garbled and create increased electronic signature. The use of prowords is essential in reducing transmission time and avoiding confusion.
- Minimize transmission time.

TYPES OF NETS

Stations are grouped into nets according to requirements of the tactical situation. A net is two or more stations in communications with each other, operating on the same frequency. Nets can be for voice and/or data communications. The types of nets follow:

Command Net (Command and control the unit's maneuver).
Intelligence Net (Communicate enemy information and develop situational awareness).
Operations and Intelligence Net.
Administration and Logistics Net (Coordinate sustainment assets).

PRECEDENCE OF REPORTS

Flash (For initial enemy contact reports).
Immediate (Situations which greatly affect the security of national and allied forces).
Priority (Important message over routine traffic).
Routine (All types of messages that are not urgent).

MESSAGE FORMAT

Heading—A heading consists of the following information:

1. Identity of distant station and self.
2. Transmission instructions (Relay To, Read Back, Do Not Answer).
3. Precedence.
4. FROM/TO.

Text—Text is used to—

1. Separate heading from message with Break.
2. State reason for message.

Ending—An ending consists of—

Final Instructions (Correction, I Say Again, More to Follow, Standby, Execute, Wait). OVER or OUT (never use both together).

COMMON MESSAGES

Soldiers should know how to prepare and use the Nine-Line MEDEVAC Request and the call for fire.

Nine-Line MEDEVAC Request—For a more detailed description, see Table 4-3 in FM 4-02.2 (*Medical Evacuation*):

Line 1: Location of pickup site.
Line 2: Radio frequency, call sign, and suffix.
Line 3: Number of patients by precedence.
Line 4: Special equipment required.
Line 5: Patient type.
Line 6: Security of pickup site (wartime).
Line 6: Number and type of wound, injury, or illness (peacetime).
Line 7: Method of marking pickup site.
Line 8: Patient nationality and status.
Line 9: Chemical, biological, radiological, or nuclear (CBRN) contamination (wartime).
Line 9: Terrain description (peacetime).

Call for Fire—The normal call for fire is sent in three parts, each of which has the following six elements. The six elements, detailed in the sequence in which they are transmitted, follow: For a more detailed explanation for calling for fire, see FM 6-30, chapter 4 (*Tactics, Techniques, and Procedures for Observed Fire*):

- Observer identification.
- Warning order.
- Target location.
- Target description.
- Method of engagement.
- Method of fire and control.

PROWORDS

The following paragraphs discuss common, strength, and readability prowords, as well as radio checks:

Common Prowords—Common prowords are those words used on a regular basis while conducting radio operations. They are NOT interchangeable, as the meanings are specific and clear to the receiver. An example is "Say Again" versus "Repeat." "Say Again" means to repeat the last transmission, while "Repeat" refers to fire support, and means to fire the last mission again (Figure 12-1).

PROWORD	MEANING
ALL AFTER	I refer to the entire message that follows...
ALL BEFORE	I refer to the entire message that precedes...
BREAK	I now separate the text from other parts of the message.
CORRECTION	There is an error in this transmission. This will continue with the last word correctly transmitted.
GROUPS	This message contains the number of groups indicated by the numeral following.
I SAY AGAIN	I am repeating transmission or part indicated.
I SPELL	I shall spell the next word phonetically.
MESSAGE	A message that requires recording is about to follow. (Transmitted immediately after the call.) This proword is not used on nets primarily employed for conveying messages. It is intended for use when messages are passed on tactical or reporting net.
MORE TO FOLLOW	Transmitting station has additional traffic for the receiving station.
OUT	This is the end of my transmission to you and no answer is required or expected.
OVER	This is the end of my transmission to you and a response is necessary. Go ahead: transmit.
RADIO CHECK	What is my signal strength and readability, i.e. How do you hear me?
ROGER	I have received your last transmission satisfactorily, radio check is loud and clear.
SAY AGAIN	Repeat all of your last transmission. Followed by identification data means "repeat - (portion indicated)."
THIS IS	This transmission is from the station whose designator immediately follows.
TIME	That which immediately follows is the time or date-time group of the message.
WAIT	I must pause for a few seconds.
WAIT-OUT	I must pause longer than a few seconds.
WILCO	I have received your transmission, understand it, and will comply, to be used only by the addressee. Since the meaning of ROGER is included in that of WILCO, the two prowords are never used together.
WORD AFTER	I refer to the word of the message that follows.
WORD BEFORE	I refer to the word of the message that precedes.

Figure 12-1. Common prowords.

Strength and Readability Prowords—Certain strength and readability prowords must be used during radio checks:

Strength Prowords

- Loud.
- Good.
- Weak.
- Very Weak.
- Poor.

Readability Prowords

- Clear.
- Readable.
- Unreadable.
- Distorted.
- With Interference.
- Intermittent.

Radio Checks—Rating signal strength and readability. An example radio check follows:

Radio Check: What is my strength and readability?
Roger: I received your transmission satisfactorily.

OPERATION ON A NET

Preliminary Calls

Bulldog 19, this is Bulldog 29. Over. Bulldog 29, this is Bulldog 19. Over.
Bulldog 19, this is Bulldog 29. Message. Over.
Bulldog 29, this is Bulldog 19. Send your message. Over.

Correction

Bulldog 19, this is Bulldog 29. Convoy Romeo 3, correction: Romeo 4 should arrive 1630z. Over.

Read Back

Bulldog 19, this is Bulldog 29. Read back. Convoy has arrived. Time 1630z. Over.

Say Again

Bulldog 19, this is Bulldog 29. Request a recovery vehicle to grid 329966. Over.
Bulldog 29, this is Bulldog 19. Say again, all before grid. Over.
Bulldog 19, this is Bulldog 29. I say again. Request a recovery vehicle. Over.

Roger versus Wilco

Bulldog 19, this is Bulldog 29. Request a recovery vehicle to grid 329966. Over.
Bulldog 29, this is Bulldog 19. Roger. Over.
Bulldog 19, this is Bulldog 29. MOVE TO GRID 329966. Over.
Bulldog 29, this is Bulldog 19. WILCO. Over
Bulldog 29, this is Bulldog 19. Roger. Over.

SECTION III. COMMUNICATIONS SECURITY

Communications security (COMSEC) consists of measures and controls to deny unauthorized persons information from telecommunications and ensure authenticity of such telecommunication. COMSEC material includes—

- Cryptographic security.
- Transmission security.
- Emission security.
- Physical security.

CLASSIFICATIONS

Classified material, protected against unauthorized access, is information produced and owned by the U.S. government. Authorized access to (clearance to view) classified material requires a NEED-TO-KNOW designation and the appropriate security clearance. Responsibility to protect security of the material rests with the individual handling it. No person is authorized based solely on their rank, title, or position. They are only authorized by their classification level. The three levels of security classification (clearances) follow:

Top Secret—This classification applies to material that could cause exceptionally grave damage to national security.
Secret—This classification applies to material that could cause serious damage to national security.
Confidential—This classification applies to material that could cause damage to national security.

Note: "For official use only" (FOUO) is a handling instruction, *not* a classification.

SIGNAL OPERATING INSTRUCTIONS

The signal operating instructions (SOI) is a COMSEC aid designed to provide transmission security by limiting and impairing enemy intelligence-collection efforts. The SOI is a series of orders issued for technical control and coordination of a command or activity. It provides guidance needed to ensure the speed, simplicity, and security of communications.

Types

- Training SOI: Unclassified or FOUO.
- Operation SOI: Used only when deployed for mission.

- Exercise SOI: Used for field training exercises.

Components

- Call signs.
- Frequencies.
- Pyrotechnics.
- Challenge and password.

AUTOMATED NET CONTROL DEVICE

The automated net control device (ANCD) (Figures 12-2 and 12-3) is a handheld device that allows users to store/transmit data via cable and retrieve COMSEC. It is enabled for night viewing. It also features a water-resistant case and sufficient backup memory.

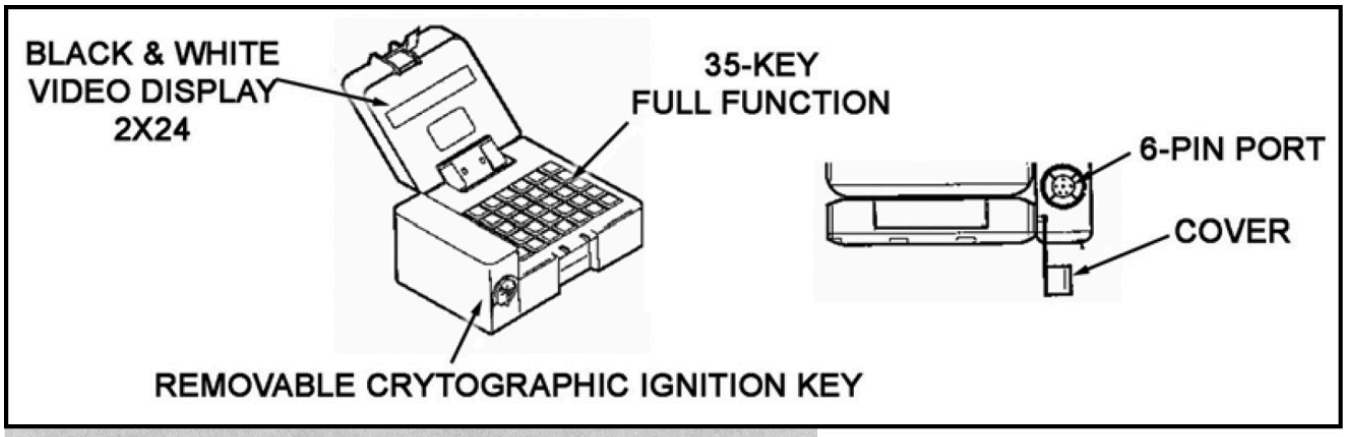


Figure 12-2. Automated net control device.

LAMP	ZERO	MAIN MENU	RECV	SEND	ABORT	ON/ OFF
A P UP	B BAT	C CLR	D DELE	E 7	F 8	G 9
H P DN	I ^	J	K	L 4	M 5	N 6
O <	P SPACE	Q >	R	S 1	T 2	U 3
LOCK LTR	V V	W -	X /	Y 0	Z .	ENTER

Figure 12-3. Automated net control device keypad.

MAIN MENU

The main menu has three choices:

- SOI pertains to SOI Information.
- Radio pertains to COMSEC keys/FH data to be loaded into the radio.
- Supervisor pertains to areas performed by the supervisor only.

To select areas of the main menu—

1. Use the ARROW key function by pressing either the left or right arrow keys, and then press the ENTER key.
2. Press the corresponding capital letter on the keyboard to take you directly to a specific topic:
    a. S—Signal operating instructions.
    b. R—Radio.
    c. U—Supervisor.

CALL SIGNS

Call signs have two parts (Figure 12-4):

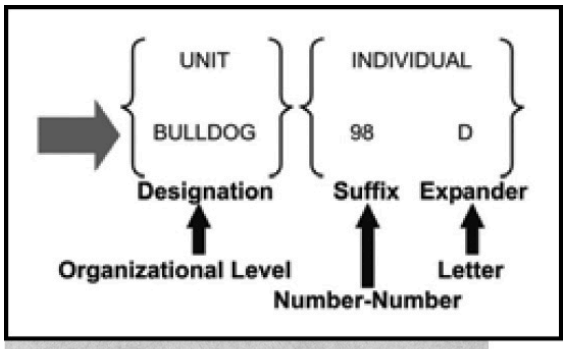


Figure 12-4. Call signs.

- Designation call sign identifies the major unit (corps, division, brigade, or battalion).
- Suffix and expanders identify individuals by position.

TIME PERIODS (TPs)
Set times (Figure 12-5).

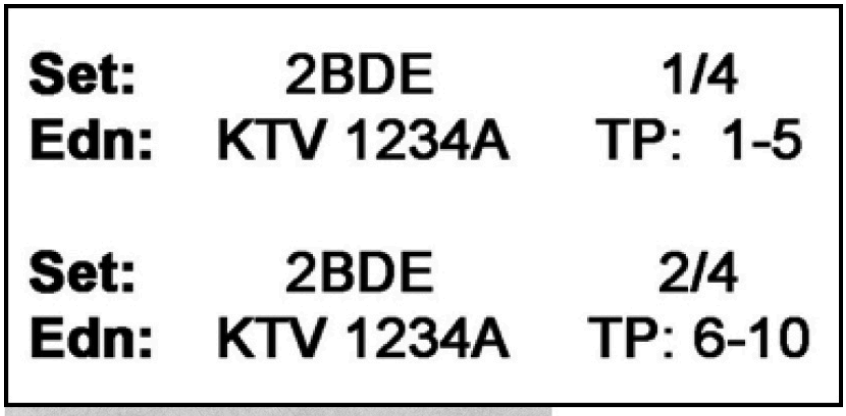


Figure 12-5. Time periods.

- Ten time periods in an SOI, which change by calendar day at a designated time (typically 2400Z).
- Each time period has a different call sign and frequency for each unit.
- ANCD breaks them into 2 SETS: TP: 1-5 and TP: 6-10.

Note: Follow unit SOP for preventive and immediate action measures for capture or compromise of SOI or systems.

SECTION IV. EQUIPMENT

This section discusses radio, wire, and telephone equipment.

RADIOS

Radios are particularly suited for use when you are on the move and need a means of maintaining command and control. Small handheld or backpacked radios that communicate for only short distances are found at squad and platoon level. As the need grows to talk over greater distances and to more units, the size and complexity of radios are increased. The enhancement in modern radio technology is based upon three basic radio systems, each with its own capabilities and characteristics: improved high frequency radio (IHFR), single-channel ground and airborne radio systems (SINCGARS), and single-channel tactical satellite communications (SATCOM). A radio set has a transmitter and receiver. Other items necessary for operation include a battery for a power source and an antenna for radiation and reception of radio waves. The transmitter contains an oscillator that generates radio frequency (RF) energy in the form of alternating current (AC). A transmission line or cable feeds the RF to the antenna. The antenna converts the AC into electromagnetic energy, which radiates into space. Many radio antennas can be configured or changed to transmit in all directions or in a narrow direction to help minimize the enemy's ability to locate the transmitter. A keying device is used to control the transmission.

AN/PRC-148 MULTIBAND, INTRATEAM RADIO (MBITR)

See Figure 12-6.

Receiver Transmitter Unit (RTU)	
Range	5 kilometers
Antennas	30-90 MHz 30-512 MHz (reduced gain below 90 MHz)
Batteries	Rechargeable Lithium-Ion (2) Nonrechargeable (2) and case
Optimal battery life	10 hrs
Weight	2 pounds
Interoperability	AN/PRC-119 SINCGARS
Transceiver/battery holster	
System carrying bag	

Figure 12-6. AN/PRC-148 multiband, intrateam radio (MBITR).

Note: Battery life depends upon radio settings, environmental considerations, and battery age.

IC-F43

The IC-F43 portable UHF transceiver is a two-way, intersquad, land-mobile radio with squad radio voice communications and secure protection (Figure 12-7).

Range	2.5 kilometers (2,500 meters)
Optimal battery life	10 hours
Weight	Less than 1 pound
Interoperability	AN/PRC-119 SINCGARS

Figure 12-7. IC-F43 portable UHF transceiver.

RT 1523A-D (SIP)

Running the self-test in the system improvement program (SIP) with COMSEC set to PT will produce a FAIL5 message. Change COMSEC to CT to clear the error message (Figure 12-8).

Optimal battery life	10 to 30 hours
Weight	13.7 pounds
Battery box	CY-8523C
Dumb handset	H-250
Control knobs	

Figure 12-8. AN/PRC-119A-D SIP.

RT 1523E

See Figure 12-9 for more information about the advanced system improvement program (ASIP).

Internal battery	
Optimal battery life	33 hours
Weight	8 pounds
Smart handset	HRCRD
New keypad	
Control knob	

Figure 12-9. AN/PRC-119E advanced system improvement program (ASIP).

WIRE

The decision to establish wire communications depends on the need, time required and available to install and use, and capability to maintain. The supply of wire on hand, the expected resupply, and future needs must also be considered. Wire communications can be used in most terrain and tactical situations. When in the defense, units normally communicate by wire and messenger instead of by radio. Your leaders will often have you lay the wire and install and operate the field phones.

A *surface* line is field wire DR-8 laid on the ground. Lay surface lines loosely with plenty of slack. Slack makes installation and maintenance easier. Surface lines take less time and fewer soldiers to install. When feasible, dig small trenches for the wire to protect it from shell fragments of artillery or mortar rounds. Conceal wire routes crossing open areas from enemy observation. Tag all wire lines at switchboards, and at road, trail, and rail crossings to identify the lines and make repair easier if a line is cut. An *overhead* line is field wire laid above the ground. Lay overhead lines near command posts, in assembly areas, and along roads where heavy vehicular traffic may drive off the road. Also, lay them at road crossings where trenches

cannot be dug, if culverts or bridges are unavailable. Those lines are the least likely to be damaged by vehicles or weather.

TELEPHONE EQUIPMENT

The telephone set TA-1 is a sound-powered phone with both visual and audible signals. Its range is four miles using WD-1 wire. Telephone set TA-312 is a battery-powered phone. Its range is fourteen miles using WD-1 wire.

TA-1 TELEPHONE

To install the TA-1 telephone—

- Strip away half an inch of insulation from each strand of the WD-1 wire line.
- Press the spring-loaded line binding posts and insert one strand of the wire into each post.
- Adjust the signal volume-control knob to LOUD.
- Press the generator lever several times to call the other operator.
- Listen for the buzzer sound.
- Turn the buzzer volume-control knob to obtain the desired volume.
- See if the indicator shows four white luminous markings.
- If so, press the push-to-talk switch to reset the visual indicator.

TA-312 TELEPHONE

To install the TA-312 telephone—

- Strip away half an inch of insulation from each strand of the WD-1 wire line.
- Press the spring-loaded line binding posts and insert one strand of the wire into each post.
- Adjust the buzzer volume-control knob to LOUD.
- Turn the INT-EXT switch to INT.
- Turn the circuit selector switch to LB.
- Insert two BA-30 batteries into the battery compartment (one up and one down).
- Seat the handset firmly in the retaining cradle.
- Turn the hand crank rapidly a few turns.
- Remove the handset from the retaining cradle and wait for the other operator to answer.
- Press the push-to-talk switch to talk.
- Release the push-to-talk switch to listen.

CE-11 REEL

The CE-11 reel is a lightweight, portable unit used to lay and pick up short wire lines. It includes the RL-39 band cable-reeling machine, axle, crank, carrying handles, straps ST-34 and ST-35, and telephone set TA-1/PT, all of which may be authorized as a unit or listed separately in the TOE. The DR-8 reel cable and the WD-1/TT field wire (400 feet) are always listed separately from the RL-39 and each other.

CHAPTER 13

SURVIVAL, EVASION, RESISTANCE, AND ESCAPE

Continuous operations and fast-moving battles increase your chances of either becoming temporarily separated from your unit or captured. Whether you are separated from your unit or captured, your top priority should be rejoining your unit or making it to friendly lines. If you do become isolated, every soldier must continue to fight, evade capture, and regain contact with friendly forces. If captured, detained, or held hostage, individual soldiers must live, act, and speak in a manner that leaves no doubt they adhere to the traditions and values of the U.S. Army and the Code of Conduct.

SURVIVAL

The acrostic SURVIVAL can help guide your actions in any situation (Figure 13-1). Learn what each letter represents, and practice applying these guidelines when conducting survival training:

S	**Size up the Situation (Surroundings, Physical Condition, Equipment).** In combat, conceal yourself from the enemy. Security is key. "Size up" the battlespace (situation, surroundings, physical condition, and equipment). Determine if the enemy is attacking, defending, or withdrawing. Make your survival plan, considering your basic physical needs—water, food, and shelter. ***Surroundings***--Figure out what is going on around you and find the rhythm or pattern of your environment. It includes animal and bird noises, and movements and insect sounds. It may also include enemy traffic and civilian movements. ***Physical Condition***--The pressure of the previous battle you were in (or the trauma of being in a survival situation) may have caused you to overlook wounds you received. Check your wounds and give yourself first aid. Take care to prevent further bodily harm. For instance, in any climate, drink plenty of water to prevent dehydration. If you are in a cold or wet climate, put on additional clothing to prevent hypothermia. ***Equipment***--Perhaps in the heat of battle, you lost or damaged some of your equipment. Check to see what equipment you have and its condition.
U	**Use All Your Senses: Undue Haste Makes Waste** Evaluate the situation. Note sounds and smells. Note temperature changes. Stay observant and act carefully. An unplanned action can result in your capture or death. Avoid moving just to do something. Consider all aspects of your situation before you do anything. Also, if you act in haste, you might forget or lose some of your equipment. You might also get disoriented and not know which way to go. Plan your moves. Stay ready to move out quickly, but without endangering yourself, if the enemy is near.
R	**Remember Where You Are** Find out who in your group has a map or compass. Find yourself on a map and continually reorient yourself on your location and destination. Ensure others do the same. Rely on yourself to keep track of your route. This will help you make intelligent decisions in a survival or evasion situation. Always try to determine, as a minimum, how your location relates to-- • Enemy units and controlled areas. • Friendly units and controlled areas. • Local water sources (especially important in the desert). • Areas that will provide good cover and concealment.
V	**Vanquish Fear and Panic** Fear and panic are your greatest enemies. Uncontrolled, they destroy the ability to make intelligent decisions, or they cause you to react to feelings and imagination rather than the situation. They will drain your energy, and lead to other negative emotions. Control them by remaining self-confident and using what you learned in your survival training.
I	**Improvise** Americans are unused to making do. This can hold you back in a survival situation. Learn to improvise. Take a tool designed for a specific purpose and see how many other uses you can find for it. Learn to use natural objects around you for different needs, for example, use a rock for a hammer. When your survival kit inevitably wears out, you must use your imagination. In fact, when you can improvise suitable tools, do so, and save your survival kit items for times when you have no such options.
V	**Value Living** When faced with the stresses, inconveniences, and discomforts of a survival situation, Soldiers must maintain a high value on living. The experience and knowledge you have gained through life and Army training will have a bearing on your will to live. Perseverance, a refusal to give in to problems and obstacles that face you, will give you the mental and physical strength to endure.
A	**Act like the Natives** Locals (indigenous people and animals) have already adapted to an environment that is strange to you. • Observe daily routines of local people. Where do they get food and water? When and where do they eat? What time do they go to bed and get up? The answers to these questions can help you avoid capture. • Watch animals, who also need food, water, and shelter, to help you find the same. • Remember that animals may react to you, revealing your presence to the enemy. • In friendly areas, gain rapport with locals by showing interest in their customs. Studying them helps you learn to respect them, allows you to make valuable friends, and, most importantly, helps you adapt to their environment. All of these will increase your chance of survival.
L	**Live by your Wits, but for Now Learn Basic Skills** Having basic survival and evasion skills will help you live through a combat survival situation. Without these skills, your chance of survival is slight. • Learn these skills now—not en route to, or in, battle. Know the environment you are going into and practice basic skills geared to the environment. Equipping yourself for the environment beforehand will help determine whether you survive. For instance, if you are going to a desert, know how to get--and purify--water. • Practice basic survival skills during all training programs and exercises. Survival training reduces fear of the unknown, gives you self-confidence, and teaches you to live by your wits.

Figure 13-1. SURVIVAL.

THREE-PHASE SURVIVAL KIT

A useful technique for organizing survival is the three-phase individual survival kit. The content of each phase of the kit depends on the environment in the area of operation (AO) and available supplies. An example of the contents of a three-phase survival kit is as follows:

Phase 1 (Extreme)

Soldier without any equipment (load-bearing equipment or rucksack). Items to be carried (and their suggested uses) include—

- Safety pins in hat (fishing hooks or holding together torn clothes).
- Utility knife with magnesium fire starter on 550 cord wrapped around waist (knife, making ropes, and fire starter).
- Wrist compass (navigation).

Phase 2 (Moderate)

Soldiers with load-bearing equipment. Load-bearing equipment should contain a small survival kit. Kit should be tailored to the AO and should contain only basic health and survival necessities:

- 550 cord, 6 feet (cordage, tie down, fishing line, weapons, and snares).
- Waterproof matches or lighter (fire starter).
- Iodine tablets (water purification, treating small cuts).
- Fish hooks or lures (fishing).
- Heavy-duty knife with sharpener, bayonet type (heavy chopping or cutting).
- Mirror (signaling).
- Tape (utility work).
- Aspirin.
- Clear plastic bag (water purification, solar stills).
- Candles (heat, light).
- Surgical tubing (snares, weapons, drinking tube).
- Trip wire (traps, snares, weapons).
- Dental floss (cordage, fishing line, tie down, traps).
- Upholstery needles (sewing, fish hooks).

Phase 3 (Slight)

Soldier with load-bearing equipment and rucksack. Rucksack should contain only minimal equipment. The following are some examples:

- Poncho (shelters, gather water such as dew).
- Water purification pump.
- Cordage (550), 20 feet.
- Change of clothes.
- Cold- and wet-weather jacket and pants.
- Poncho liner or lightweight sleeping bag.

Note: Items chosen for survival kits should have multiple uses. The items in the above list are only suggestions.

EVASION

Evasion is the action you take to stay out of the enemy's hands when separated from your unit and in enemy territory. There are several courses of action you can take to avoid capture and rejoin your unit. You may stay in your current position and wait for friendly troops to find you, or you may try to move and find friendly lines. Below are a few guidelines you can follow.

PLANNING

Planning is essential to achieve successful evasion. Follow these guidelines for successful evasion:

- Keep a positive attitude.
- Use established procedures.
- Follow your evasion plan of action (EPA).
- Be patient.
- Drink water.
- Conserve strength for critical periods.
- Rest and sleep as much as possible.
- Stay out of sight.

ODORS

Avoid the following odors (they stand out and may give you away):

- Scented soaps and shampoos.
- Shaving cream, after-shave lotion, or other cosmetics.
- Insect repellent (camouflage stick is least scented).
- Gum and candy (smell is strong or sweet).
- Tobacco (odor is unmistakable).
- Mask scent using crushed grasses, berries, dirt, and charcoal.

EVASION PLAN OF ACTION

Establish—

- Suitable area for recovery.
- Selected area for evasion.
- Neutral or friendly country or area.
- Designated area for recovery.

SHELTERS

Keep the following guidelines in mind concerning shelters:

- Use camouflage and concealment.

- Locate carefully (BLISS [blend, low silhouette, irregular shape, small, secluded location], Figure 13-2).

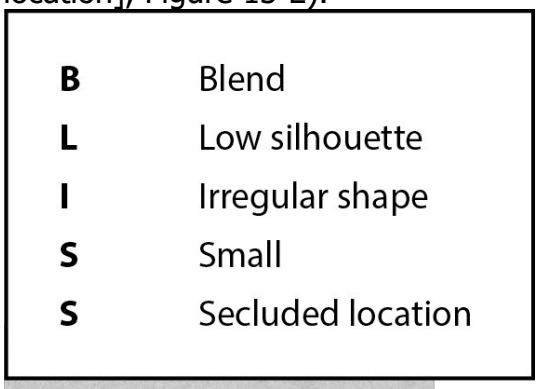


Figure 13-2. Tool for remembering shelter locations.

- Choose an area
    - Least likely to be searched (for example, drainages, rough terrain) and that blends with the environment.
    - With escape routes (do not corner yourself).
    - With observable approaches.
- Locate entrances and exits in brush and along ridges, ditches, and rocks to keep from forming paths to site.
- Be wary of flash floods in ravines and canyons.
- Conceal with minimal to no preparation.
- Take the radio direction-finding threat into account before transmitting from shelter.
- Ensure overhead concealment.

MOVEMENT

Remember, a moving object is easy to spot. If travel is necessary—

- Mask with natural cover.
- Stay off ridgelines and use the military crest (2/3 of the way up) of a hill.
- Restrict to periods of low light, bad weather, wind, or reduced enemy activity.
- Avoid silhouetting.
- Do the following at irregular intervals:
    - Stop at a point of concealment.
    - Look for signs of human or animal activity (such as smoke, tracks, roads, troops, vehicles, aircraft, wire, and buildings). Watch for trip wires or booby traps, and avoid leaving evidence of travel. Peripheral vision is more effective for recognizing movement at night and twilight.
    - Listen for vehicles, troops, aircraft, weapons, animals, and so forth.
    - Smell for vehicles, troops, animals, fires, and so forth.
- Use noise discipline; check clothing and equipment for items that could make noise during movement and secure them.
- Break up the human shape or recognizable lines.

- Camouflage evidence of travel. Route selection requires detailed planning and special techniques (irregular route/zigzag).
- Conceal evidence of travel. Use the following techniques:
    - Avoid disturbing vegetation.
    - Do not break branches, leaves, or grass. Use a walking stick to part vegetation and push it back to its original position.
    - Do not grab small trees or brush. (This may scuff the bark or create movement that is easily spotted. In snow country, this creates a path of snow-less vegetation revealing your route.)
    - Pick firm footing (carefully place the foot lightly but squarely on the surface to avoid slipping).
- Try not to—
    - Overturn ground cover, rocks, and sticks.
    - Scuff bark on logs and sticks.
    - Make noise by breaking sticks. (Cloth wrapped around feet helps muffle noise.)
    - Mangle grass and bushes that normally spring back.
- Mask unavoidable tracks in soft footing.
    - Place tracks in the shadows of vegetation, downed logs, and snowdrifts.
    - Move before and during precipitation, which allows tracks to fill in.
    - Travel during windy periods.
    - Take advantage of solid surfaces (such as logs and rocks), leaving less evidence of travel.
    - Tie cloth or vegetation to feet, or pat out tracks lightly to speed their breakdown or make them look old.
- Secure trash or loose equipment and hide or bury discarded items. (Trash or lost equipment identifies who lost it.)
- If pursued by dogs, concentrate on defeating the handler.
    - Travel downwind of dog/handler, if possible.
    - Travel over rough terrain and/or through dense vegetation to slow the handler.
    - Travel downstream through fast-moving water.
    - Zigzag route if possible, consider loop-backs and "J" hooks.
- Penetrate obstacles as follows:
    - Enter deep ditches feet first to avoid injury.
    - Go around chain-link and wire fences. Go under fence if unavoidable, crossing at damaged areas. Do not touch fence; look for electrical insulators or security devices.
    - Penetrate rail fences, passing under or between lower rails. If this is impractical, go over the top, presenting as low a silhouette as possible.
    - Cross roads after observation from concealment to determine enemy activity. Cross at points offering concealment such as bushes, shadows, or bends in the road. Cross in a manner leaving footprints parallel (cross-step sideways) to the road.

RESISTANCE

Figure 13-3 shows the Code of Conduct, which prescribes how every soldier of the U.S. armed forces must conduct himself when captured (or faced with the possibility of capture).

I. I am an American, fighting in the forces which guard my country and our way of life. I am prepared to give my life in their defense.

II. I will never surrender of my own free will. If in command, I will never surrender the members of my command while they still have the means to resist.

III. If I am captured, I will continue to resist by all means available. I will make every effort to escape and aid others to escape. I will accept neither parole nor special favors from the enemy.

IV. If I become a prisoner of war, I will keep faith with my fellow prisoners. I will give no information or take part in any action which might be harmful to my comrades. If I am senior, I will take command. If not, I will obey the lawful orders of those appointed over me, and will back them up in every way.

V. When questioned, should I become a prisoner of war, I am required to give only name, rank, service number, and date of birth. I will evade answering further questions to the utmost of my ability. I will make no oral or written statements disloyal to my country (and its allies) or harmful to their cause.

VI. I will never forget that I am an American, fighting for freedom, responsible for my actions, and dedicated to the principles that made my country free. I will trust in my God and in the United States of America.

Figure 13-3. Code of Conduct.

Article I—Soldiers have a duty to support U.S. interests and oppose U.S. enemies regardless of the circumstances, whether located in a combat environment or operations other than war (OOTW) resulting in captivity, detention, or a hostage situation. Past experience of captured Americans reveals that honorable survival in captivity requires that the soldier possess a high degree of dedication and motivation. Maintaining these qualities requires knowledge of, and a strong belief in, the following:

- The advantages of American democratic institutions and concepts.
- Love and faith in the United States and a conviction that the U.S. cause is just.
- Faith and loyalty to fellow prisoners of war (POWs).

Article II—Members of the armed forces may never surrender voluntarily. Even when isolated and no longer able to inflict casualties on the enemy or otherwise defend themselves, soldiers must try to evade capture and rejoin the nearest friendly force. Surrender is the willful act of members of the armed forces turning themselves over to enemy forces when not required by utmost necessity or extremity. Surrender is always dishonorable and never allowed. When there is no chance for meaningful resistance, evasion is impossible, and further fighting would lead to death with no significant loss to the enemy, members of the armed forces should view themselves as "captured" against their will, versus a circumstance that is seen as voluntarily "surrendering." Soldiers must remember the capture was dictated by the futility of the situation and overwhelming enemy strengths.

Article III—The misfortune of capture does not lessen the duty of a member of the armed forces to continue resisting enemy exploitation by all means available. Contrary to the Geneva Conventions, enemies whom U.S. forces have engaged since 1949 have regarded the POW compound as an extension of the battlefield. The POW must be prepared for this fact. In the past, enemies of the United States have used physical and mental harassment, general mistreatment, torture, medical neglect, and political indoctrination against POWs. POWs must not seek special privileges or accept special favors at the expense of fellow POWs. POWs must be prepared to take advantage of escape opportunities whenever they arise. The United States does not authorize any military service member to sign or enter into any such parole agreement.

Article IV—Officers and noncommissioned officers (NCOs) shall continue to carry out their responsibilities and exercise their authority in captivity. Informing on, or any other action detrimental to a fellow POW, is despicable and expressly forbidden. POWs especially must avoid helping the enemy to identify fellow POWs who may have knowledge of value to the enemy and who may be made to suffer coercive interrogation. Strong leadership is essential to discipline. Without discipline, camp organization, resistance, and even survival may be impossible. Personal hygiene, camp sanitation, and care of the sick and wounded are imperative. Wherever located, POWs should organize in a military manner under the senior military POW eligible for command. The senior POW (whether officer or enlisted) in the POW camp or among a group of POWs shall assume command according to rank without regard to military service.

Article V—When questioned, a POW is required by the Geneva Conventions and the Code of Conduct, and is permitted by the Uniform Code of Military Justice (UCMJ), to give name, rank, service number, and date of birth. The enemy has no right to try to force a POW to provide any additional information. However, it is unrealistic to expect a POW to remain confined for years reciting only name, rank, service number, and date of birth. If a POW finds that, under intense coercion, he unwillingly or accidentally discloses unauthorized information, the service member should attempt to recover and resist with a fresh line of mental defense. The best way for a POW to resist is to keep faith with the United States, fellow POWs, and oneself to provide the enemy with as little information as possible.

Article VI—A member of the armed forces remains responsible for personal actions at all times. Article VI is designed to assist members of the armed forces to fulfill their

responsibilities and survive captivity with honor. The Code of Conduct does not conflict with the UCMJ, which continues to apply to each military member during captivity or other hostile detention. Failure to adhere to the Code of Conduct may subject service members to applicable disposition under the UCMJ. A member of the armed forces who is captured has a continuing obligation to resist all attempts at indoctrination and must remain loyal to the United States.

ESCAPE

Escape is the action you take to get away from the enemy if you are captured. The best time for escape is right after capture as you will be in a better physical and mental condition. Bad food and bad treatment during capture add to the already stressful fact of captivity. When detained, you will be given minimal rations that are barely enough to sustain life and certainly not enough to build up a reserve of energy. The physical treatment, medical care, and rations of prison life quickly cause physical weakness, night blindness, and loss of coordination and reasoning power. Once you have escaped, it may not be easy to contact friendly troops or get back to their lines, even when you know where they are. Learn and use the information in this chapter to increase your chance of survival on today's battlefield. For more information, see FM 3-05.70 (*Survival*) and ATP 3-50.3. Other reasons for escaping early include—

- Friendly fire or air strikes may cause enough confusion and disorder to provide a chance to escape.
- The first guards usually have less training in handling prisoners than the next set. You have a better chance of getting away from the first ones.
- You might know something about the area where you were first captured. You might even know the locations of nearby friendly units.
- The way you escape depends on what you can think of to fit the situation.
- The only general rules are to escape early and when the enemy is distracted.

CHAPTER 14

MINES, DEMOLITIONS, AND BREACHING PROCEDURES

A unit may use mines during security, defensive, and offensive operations in order to reduce the enemy's mobility. In such operations, you must emplace the mines and, when required, retrieve them. In order to breach minefields and wire obstacles, there will be times when you have to physically detect and clear them. You must be proficient at correctly and safely handling demolition firing systems. This chapter will help you gain a true appreciation of the requirements and time it takes to perform an actual mine-warfare mission.

SECTION I. MINES

This section discusses antipersonnel and antitank mines. Some mines are "smart." That is, they contain radio frequency (RF) receivers, which allow for remote or automatic self-destruction or self-deactivation via a radio control unit (RCU), on demand, after a period of time, or at a particular time. The default self-destruct time, once the mines are dispensed, is four hours.

ANTIPERSONNEL MINES

Antipersonnel mines are designed specifically to reroute, block, or protect friendly obstacles. These mines are designed to kill or disable their victims and are activated by command detonation.

U.S. NATIONAL POLICY ON ANTIPERSONNEL LAND MINES

On May 16, 1996, the president of the United States implemented a phased restriction and elimination of antipersonnel land mines. Implementation began with non-self-destructing mines but will eventually include all types of antipersonnel mines. This policy applies to all Infantry units either engaged in or training for operations worldwide. The use of non-self-destructing antipersonnel land mines is restricted to specific areas:

- Within internationally recognized national borders.
- In established demilitarized zones such as to defend South Korea.

Mines approved for use must be emplaced in an area with clearly marked perimeters. They must be monitored by military personnel and protected by adequate means to ensure the exclusion of civilians.

U.S. policy also forbids U.S. forces from using standard or improvised explosive devices as booby traps.

Except for South Korea–based units, and for units deploying to South Korea for training exercises, this policy forbids training with and employing inert M14 and M16 mines. This applies to units' home stations as well as at Combat Training Centers, except in the context of countermine or mine-removal training.

- *Training with live M14 mines is UNAUTHORIZED!*
- *Training with live M16 mines is authorized only for soldiers on South Korean soil.*

Exceptions:

This policy does not apply to standard use of antivehicular mines. Nor does it apply to training and using the M18 Claymore mine *in the command-detonated mode*.

When authorized by the appropriate commander, units may still use self-destructing antipersonnel mines such as the ADAM.

Authorized units may continue to emplace mixed minefields containing self-destructing antipersonnel land mines and antivehicular land mines such as MOPMS or Volcano.

The terms *mine*, *antipersonnel obstacle*, *protective minefield*, and *minefield* do not refer to an obstacle that contains non-self-destructing antipersonnel land mines or booby traps.

Any references to antipersonnel mines and the employment of minefields should be considered in the context of this policy.

M18A1 ANTIPERSONNEL MINE (CLAYMORE)

The M18A1, also known as the Claymore mine, is a directional, fragmentating (one-time use) antipersonnel mine (Figure 14-1, Figure 14-2, and Figure 14-3). The Claymore weighs 1.6 kilograms (3.5 pounds), 0.68 kilograms (1.5 pounds) of which is C4 (explosive) and steel sphere projectiles. One Claymore and its accessories are carried in the M7 bandoleer (Figure 14-2). When detonated, the Claymore projects steel fragments over a 60-degree, fan-shaped pattern about 6 feet (1.8 meters) high and 164 feet (50 meters) wide, at a range of 50 meters. This pattern of distribution is very effective up to 50 meters, moderately effective to 100 meters, and still dangerous out to 250 meters. It has the following features:

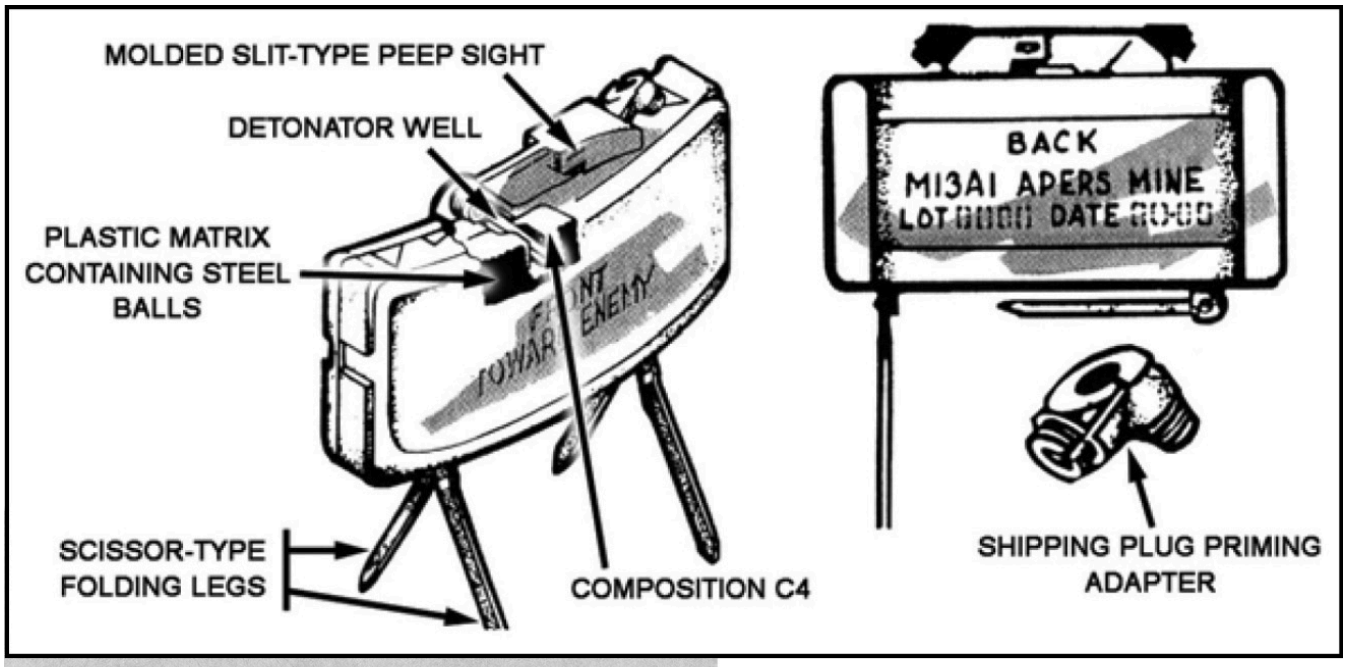


Figure 14-1. M18A1 antipersonnel mine.

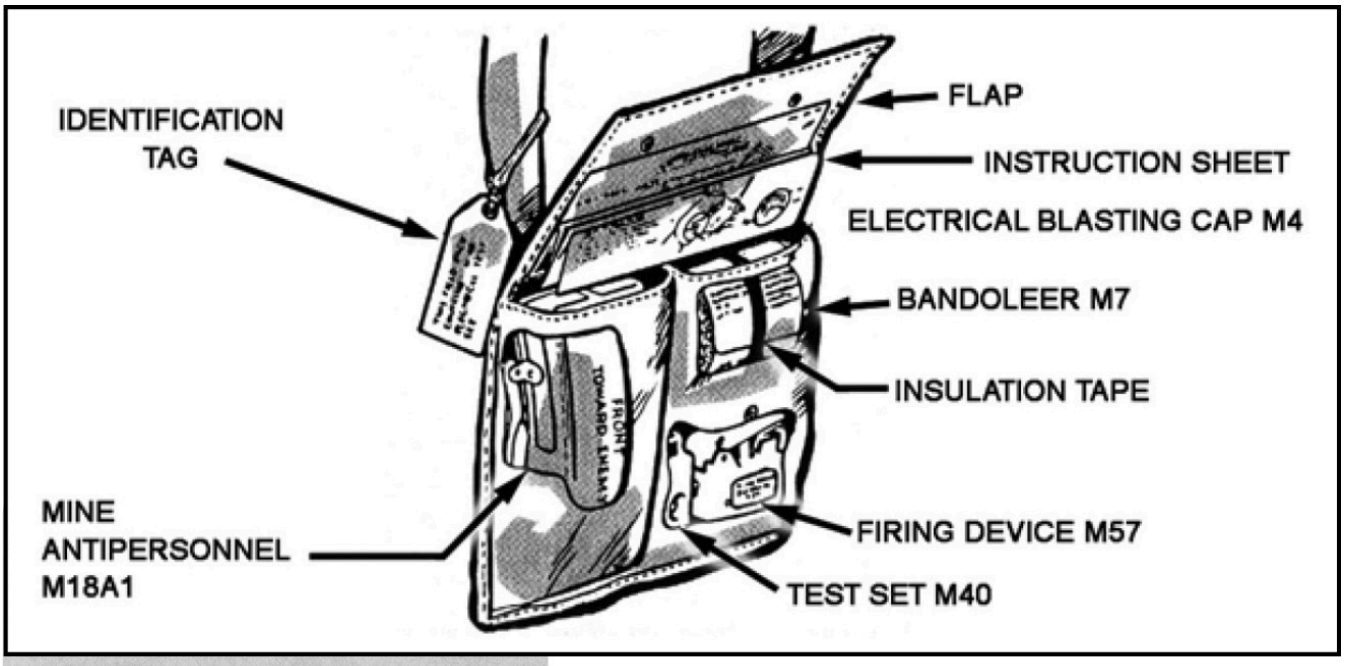
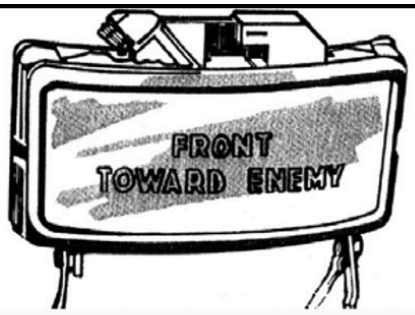
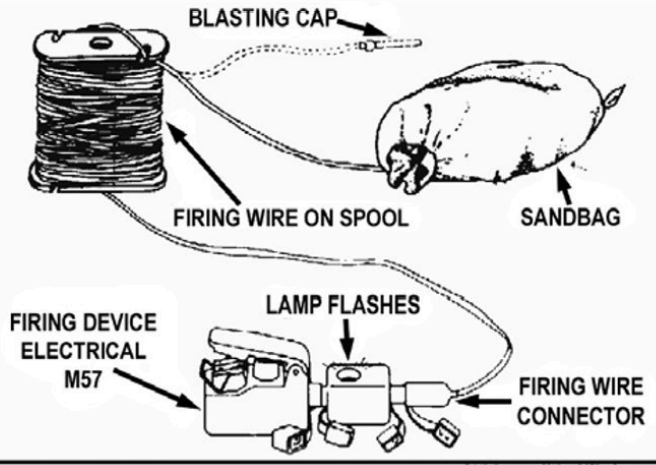


Figure 14-2. M7 bandoleer.



DATA

Wt. .....3.5 lb.
Explosives .....1.5 lb. C4
Projectiles .....700 steel balls
Equipment: One electric cap with 100 feet firing wires per mine. One circuit tester per 6 mines. One electric firing device per mine.



FIRING DEVICE TEST

Remove the dust covers from the firing device and the test set. Plug the test set into the firing device.

Position the firing device bail at the FIRE position, squeeze the handle on the firing device, and watch the window of the test set for a flash of light. The light means that the firing device and test set are functioning properly.

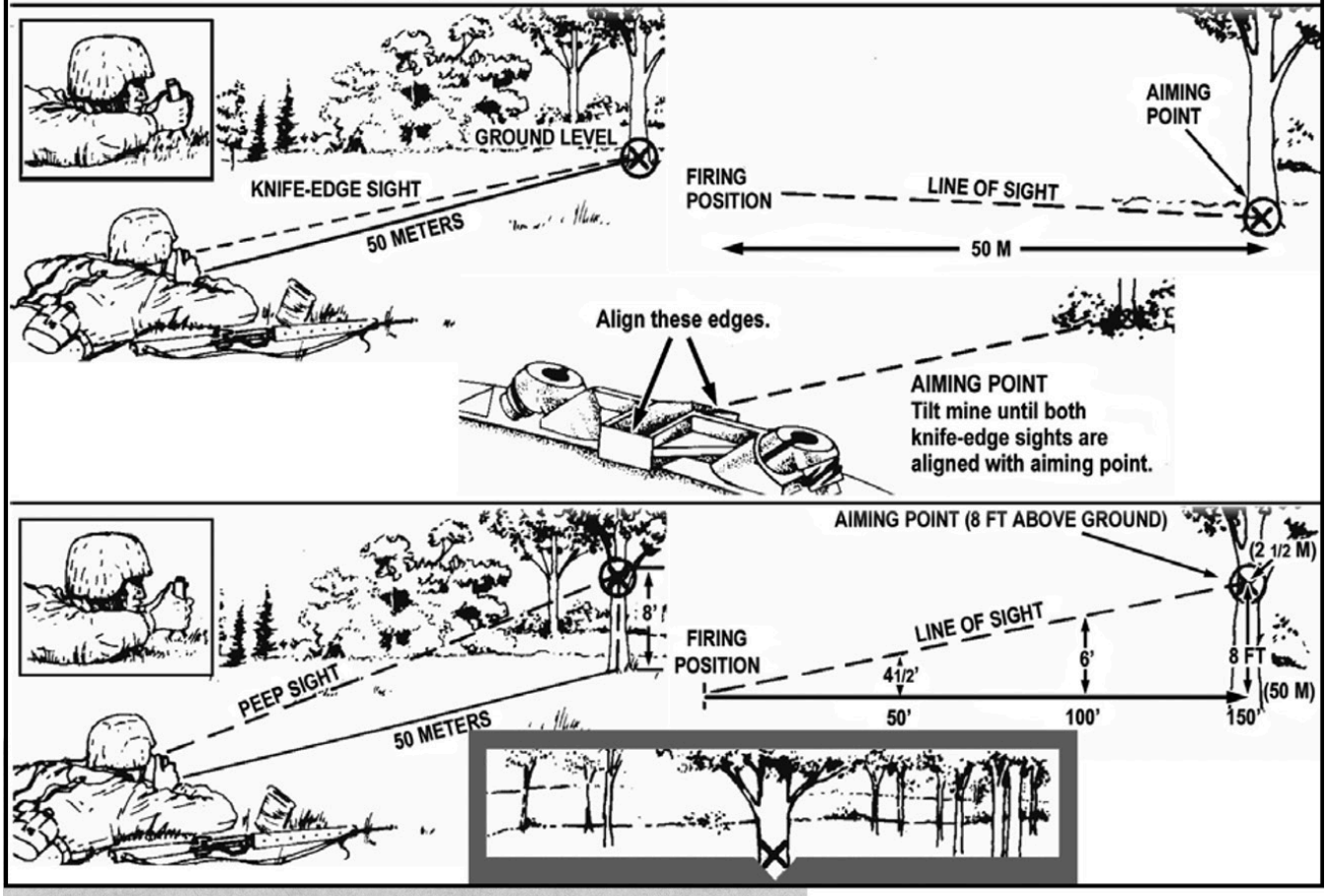


Figure 14-3. M18A1 antipersonnel mine data.

- A fixed plastic sight.
- Folding, adjustable legs.
- Two detonator wells.
- Olive-drab plastic case.

Employment
The Claymore is mainly a defensive weapon used to support other weapons in a unit's final protective fires. The Claymore may also be employed in some phases of offensive operations. Complete instructions for installing, arming, testing, and firing the Claymore are attached to the flap of the bandoleer. If possible, read the directions before employing the mine.

Emplacement for Command

Detonation
Inventory the M7 bandoleer, ensuring all components of the M18A1 Claymore mine are present and in serviceable condition. Components consist of an M18A1 Claymore mine, M57 firing device, M40 test set, and a firing wire with blasting cap.

- Conduct a circuit test, with the blasting cap secured under a sandbag.
- Install the M18A1 Claymore mine.
- Aim the mine.
- Arm the mine.
- Recheck the aim.
- Recheck the circuit.
- Fire the M18A1 Claymore mine.

Recovery

- Check the firing device safety bail to ensure it is on SAFE.
- Disconnect the firing device from the wire.
- Replace the shorting plug dustcover on the firing wire connector.
- Replace the dustcover on the firing device connector.
- Keep possession of the M57 firing device.
- Untie the firing wire from the firing site stake.
- Move to the mine.
- Remove the shipping plug before priming.
- Separate the blasting cap from the mine.
- Reverse the shipping plug.
- Screw the shipping plug end into the detonator well.
- Remove the firing wire from the site stake.
- Place the blasting cap into the end of the wire connector.
- Roll the firing wire on the wire connector.
- Lift the mine from its emplacement.
- Secure the folding legs.
- Repack the mine and all the accessories in the M7 bandoleer.

M-131 MODULAR PACK MINE SYSTEM (MOPMS)

The MOPMS is a man-portable antitank and antipersonnel mine system (Figure 14-4). The M-131 module weighs about 165 pounds (75 kilograms) and contains a mix of seventeen M78 antiarmor and four M77 antipersonnel mines. The MOPMS module may be initiated by hardwire or radio control. The hardwire capability uses wire and electrical firing devices. The M-71 handheld radio control unit (RCU) allows one soldier to control as many as fifteen groups of MOPMS modules from a remote location.

Figure 14-4. M-131 Modular Pack Mine System (MOPMS).

This mine deploys four trip wires upon ejection. These wires trip a fragmenting kill mechanism (Figure 14-5).

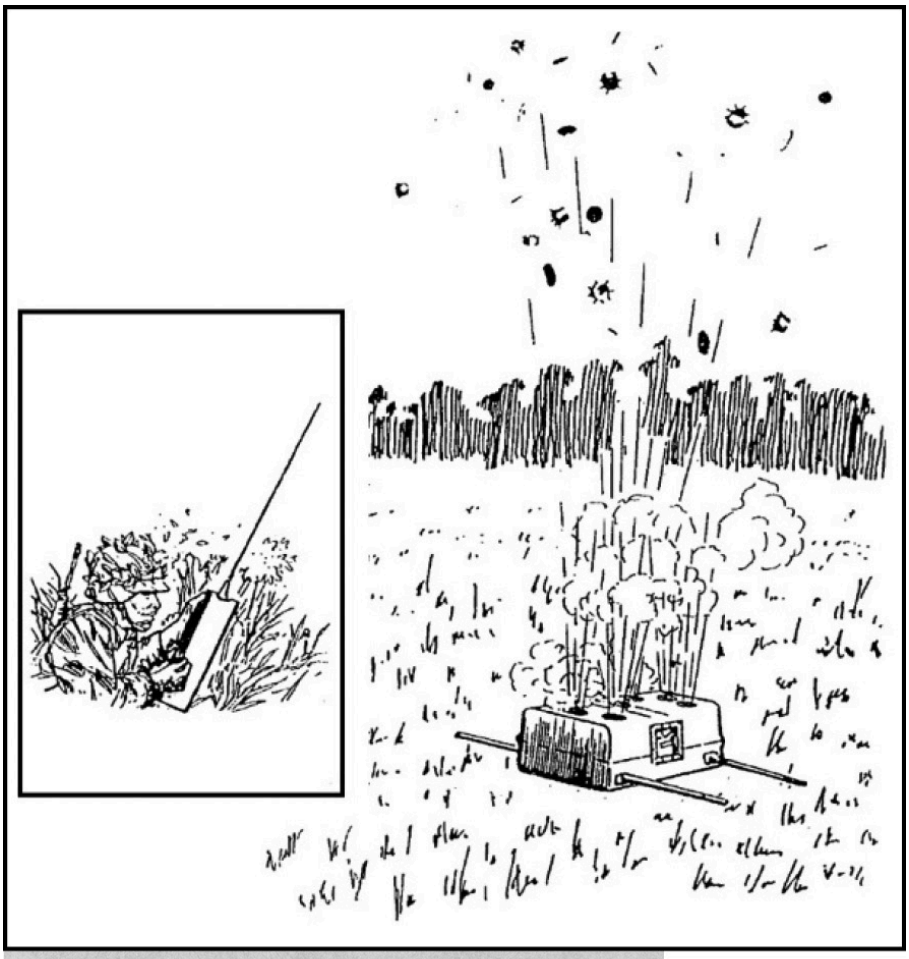


Figure 14-5. M-131 MOPMS deployed.

Each dispenser contains seven tubes; three mines are located in each tube. When dispensed, an explosive propelling charge at the bottom of each tube expels mines through the container roof. Mines are propelled 115 feet (35 meters) from the container in a 180-degree semicircle (Figure 14-6). The resulting density is 0.01 mine per square meter. The safety zone around one container is 180 feet (55 meters) to the front and sides and 66 feet (20 meters) to the rear.

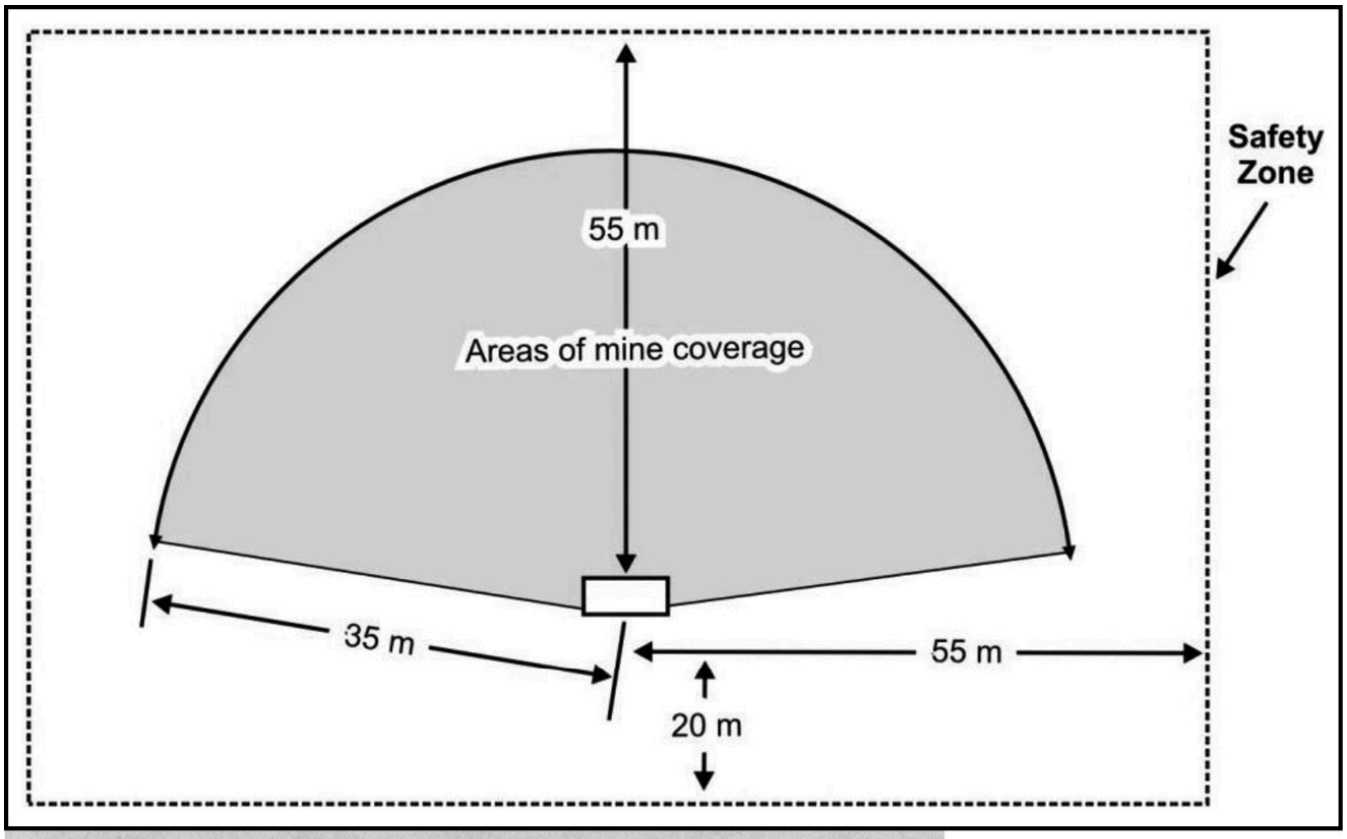


Figure 14-6. MOPMS emplacement and safety zone.

You can disarm and recover the container for later use if mines are not dispensed. The RCU can recycle the four-hour self-destruct time of the mines three times, for a total duration of sixteen hours (four hours after initial launch and three four-hour recycles). This feature makes it possible to keep the minefield in place for longer periods, if necessary. The RCU can also self-destruct mines on command. However, once the mines are dispensed they cannot be recovered or reused.

M21 ANTITANK MINE

Antitank mines are pressure activated but are typically designed so that the force of a footstep will not detonate them. Most antiarmor mines require an applied pressure of 348 to 745 pounds (158 to 338 kilograms) in order to detonate. Most tanks and other military vehicles apply that kind of pressure. Most antiarmor mines go off on contact, but some are designed to count a preset number of pressures before going off. By delaying detonation, a large number of enemy vehicles and troops might travel deep within the minefield before knowing the area is dangerous. The U.S. policy for the use of non-self-destructing antitank mines applied until 2010, when these mines were replaced by models that either self-destruct or at least self-deactivate. The M21 is a circular, steel-bodied, antiarmor mine designed to damage or destroy vehicles by a penetrating effect (Figure 14-7). The bottom of the mine is crimped to the upper mine body. An adjustable cloth carrying handle is attached to the side of the mine body and a

large filler plug is positioned between the handle connection points. A booster well is centered on the bottom. The mine has a small-diameter fuse cavity and a stamped radial pattern centered on top. The M21 is 9 inches (23 centimeters) in diameter and 4½ inches (11 centimeters) high. It weighs a total of 17 pounds (8 kilograms) with 11 pounds (5 kilograms) of high explosives. The M607 fuse protrudes from the top. This mechanical fuse can be used with or without a tilt rod. Without the tilt rod, it works like a normal pressure fuse.

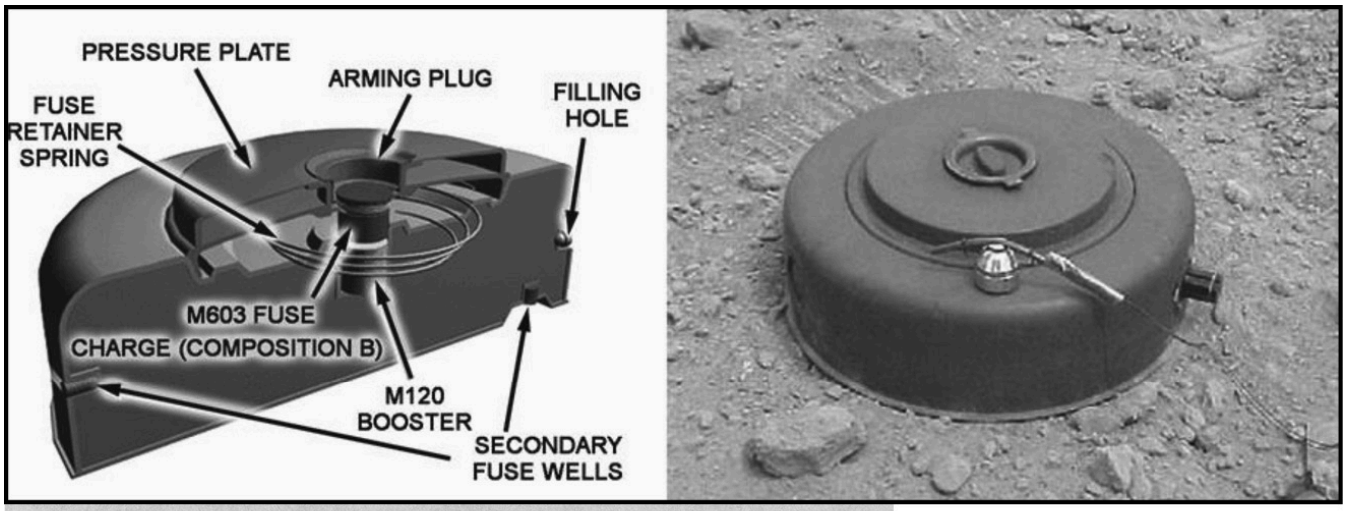


Figure 14-7. M21 antitank mine and components.

The M21 is activated by 1.8 kilograms (4 pounds) of pressure against a 21-inch (53-centimeter) long extension rod or, without the rod, by 290 pounds (132 kilograms) of vertical pressure on top of the M607 fuse. Once the fuse is triggered, it releases a firing pin, which is driven into the M46 detonator, which in turn sets off a small, black powder charge. This charge blows off the top of the mine, exposing a convex steel plate. It also drives another firing pin into an M42 primer, which in turn fires the main charge. The main charge blows the body apart and blasts the steel plate upwards through the belly armor of the tank. Unlike most antiarmor mines, this one can actually kill a tank, not just disable it. It uses a Miznay-Schardin plate as a directed-energy warhead; a kill mechanism for belly-kill and track-breaking capability. The M21 produces a kill against heavy tanks, unless the mine is activated under the track.

SECTION II. DEMOLITION FIRING SYSTEMS

The modernized demolition initiator (MDI) is a suite of initiating components used to activate all standard military demolitions and explosives (Figure 14-8). The MDI consists of nonelectric blasting cap assemblies (M11/12/13/14/15/16/18) each with an integral time-delay initiator; a time fuse or shock tube; and a "J" hook for attachment to a detonating cord. These MDIs will eventually replace all electric and nonelectric firing systems for conventional forces, while maintaining compatibility with existing army systems.

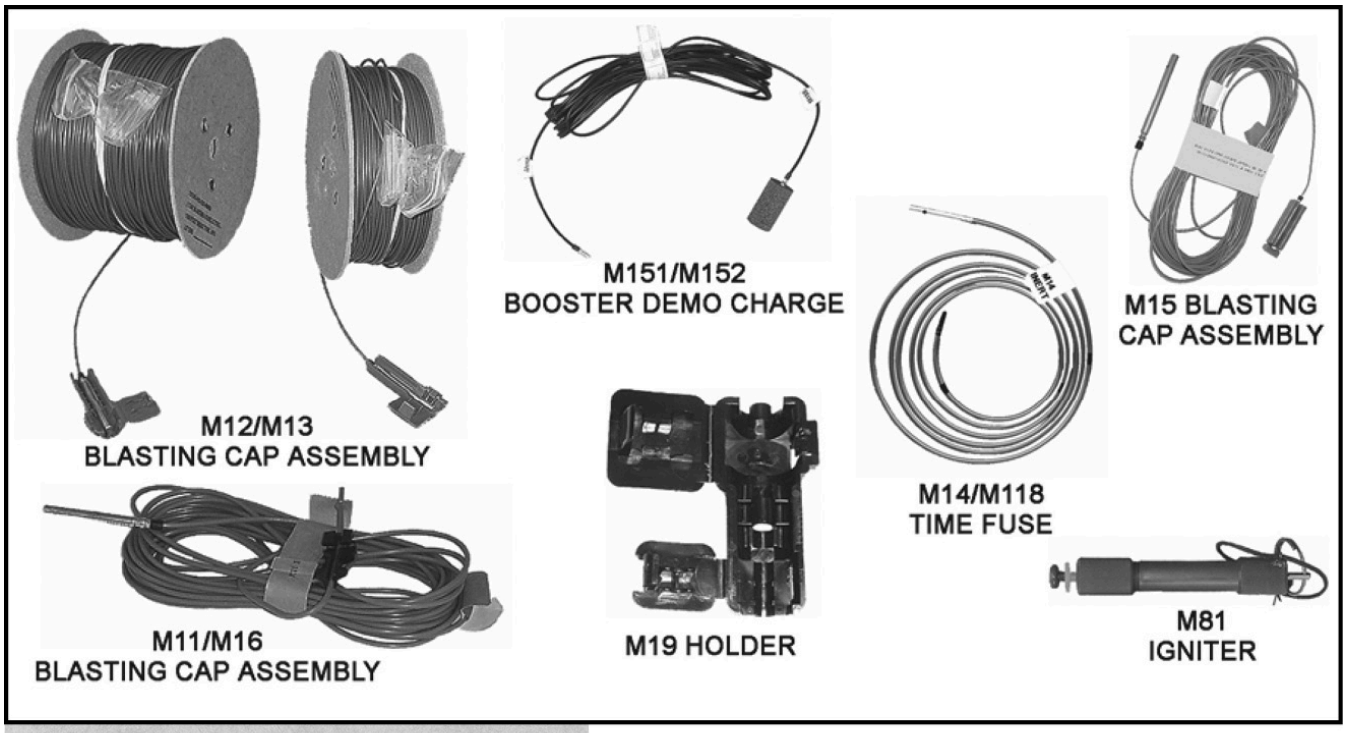


Figure 14-8. MDI components.

Note: Information on the preparation and placement of demolition charges for electric and nonelectric firing systems separate from MDI is in FM 3-34.214 (*Explosives and Demolitions*).

BOOSTER ASSEMBLIES

The MDI includes a pair of booster assemblies (M151/M152), consisting of a detonator (det) and a length of low-strength detonation cord, added to MDI. Since they contain no sensitive initiating element, they can be used to safely initiate underground charges. The MDI's blasting-cap assemblies consist of five high-strength blasting caps and two high-strength booster assemblies. These cap assemblies can be used to prime standard military explosives, or to initiate the shock tube or detonation cord of other MDI components. MDI also contains an igniter (M81) that can activate either time fuse or shock tube. With MDI, you can successfully complete demolition missions in a safe, quick, and easy manner. It is also flexible enough that any unit conducting demolition activities can use it. Timing can be set to fire immediately or up to a twenty-minute delay. It is nonelectrical, so it is impervious to electromagnetic pulse (EMP).

PRIMING OF EXPLOSIVES

The two methods of priming explosive charges are nonelectric (MDI) and detonating cord. MDI priming is safer and more reliable than the current nonelectric cap priming methods. However, detonating cord is the most preferred method of priming charges since it involves fewer blasting caps and makes priming and misfire investigation safer.

MDI blasting caps are factory-crimped to precut lengths of shock tube or time-blasting fuse. Because the caps are sealed, they are resistant to moisture and will not misfire in damp

conditions. Splicing compromises the integrity of the system, and moisture will greatly reduce reliability. Also, the human factor in incorrect crimping is removed, making MDI blasting caps extremely reliable.

PRIMING OF NONELECTRIC MDI

Use only high-strength MDI blasting caps (M11, M16, M14, M15, or M18) to prime explosive charges. M12 and M13 relay-type blasting caps have too little power to reliably detonate most explosives. Use them only as transmission lines in firing systems. You can use MDI blasting caps with priming adapters, or you can insert them directly into the explosive charge, and then secure them with black electrical tape. If you use priming adapters, place them on M11 blasting caps as follows:

Priming Plastic Explosives with Nonelectric MDI—(Figure 14-9):

1. Use M2 crimpers or other nonsparking tools to make a hole in one end or on the side (at the midpoint) of the M112 (C4) demolition block. The hole should be large enough to hold an M11, M16, M14, M18, or M15 blasting cap.
2. Insert an M11, M16, M14, M18, or M15 blasting cap into the hole produced by the M2 crimpers.

WARNING

★ If the blasting cap does not fit, *do not force it!*

★ Instead, *make the hole larger.*

3. Anchor the blasting cap in the demolition block by gently squeezing the C4 plastic explosive around the blasting cap.
4. Use tape to secure the cap in the charge M112.

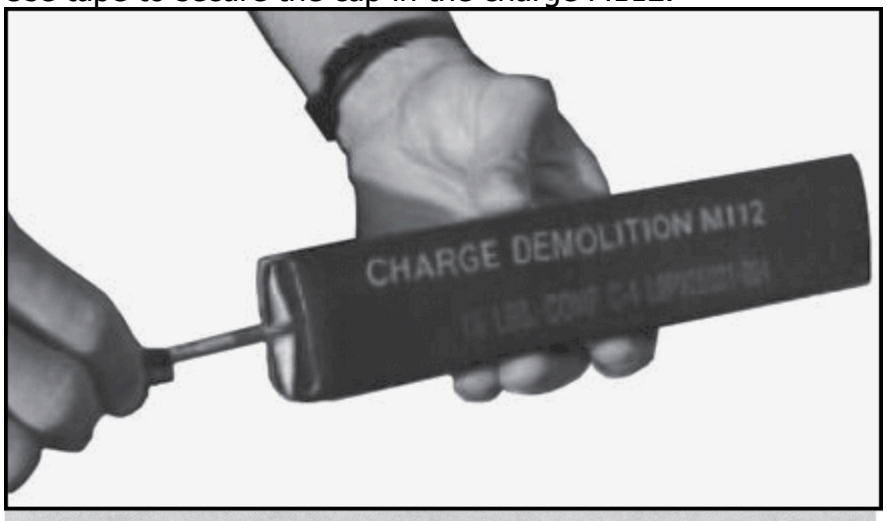


Figure 14-9. Priming of C4 demolition blocks with MDI.

PRIMING OF DETONATING CORD

1. Form either a uli knot, double overhand knot, or triple roll knot as shown in Figure 14-10.

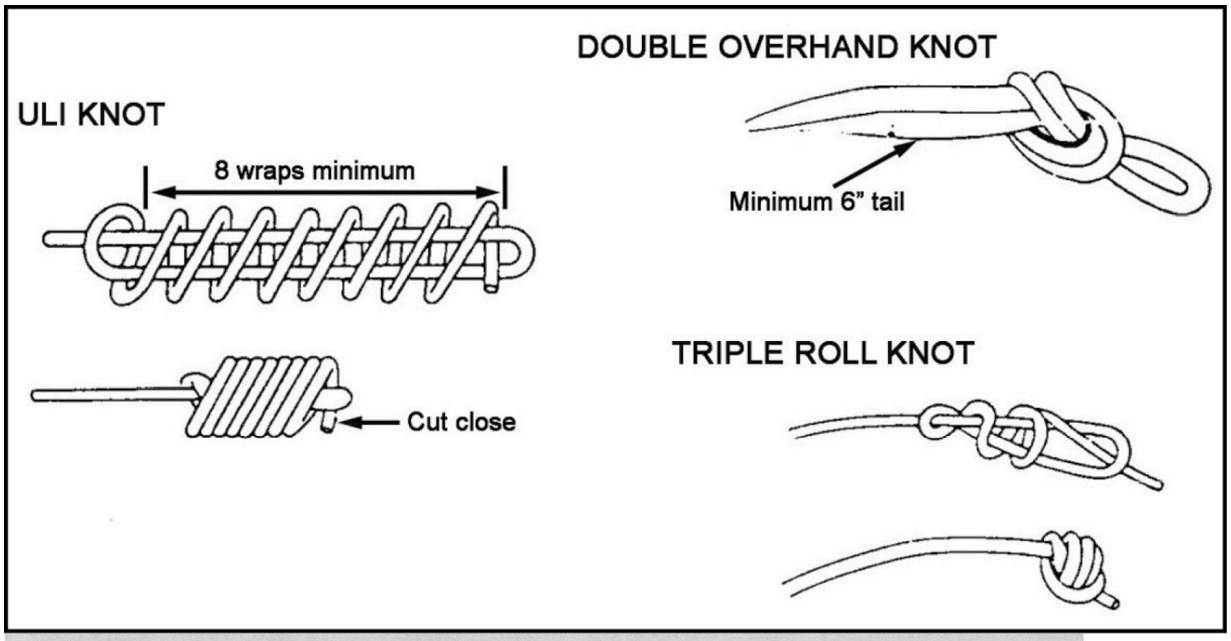


Figure 14-10. Priming of C4 demolition blocks with detonating cord.

2. Cut an L-shaped portion of the explosive, still leaving it connected to the explosive. Ensure the space is large enough to insert the knot you formed (Figure 14-11).

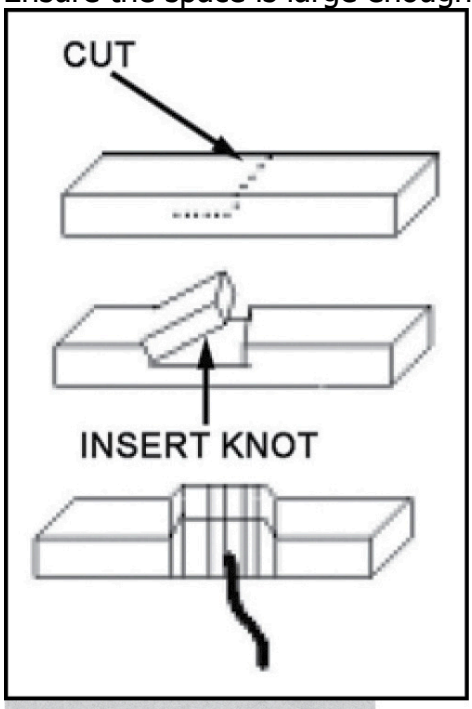


Figure 14-11. Priming of C4 with L-shaped charge.

3. Place the knot in the L-shaped cut.

4. Push the explosive from the L-shaped cut over the knot. Ensure there is at least 1 centimeter (½ inch) of explosive on all sides of the knot.
5. Strengthen the primed area by wrapping it with tape.

Note: Do not prime plastic explosives by wrapping them with detonating cord, since wraps will not properly detonate the explosive charge.

DANGER

★ To cut explosives, use a sharp, nonsparking knife on a non-sparking surface.

CONSTRUCTION OF NONELECTRIC INITIATING ASSEMBLY WITH MDI

1. Turn the end cap of the M81 fuse igniter a half-turn counterclockwise, and remove both the shipping plug and the shock tube adapter from the igniter (Figure 14-12).

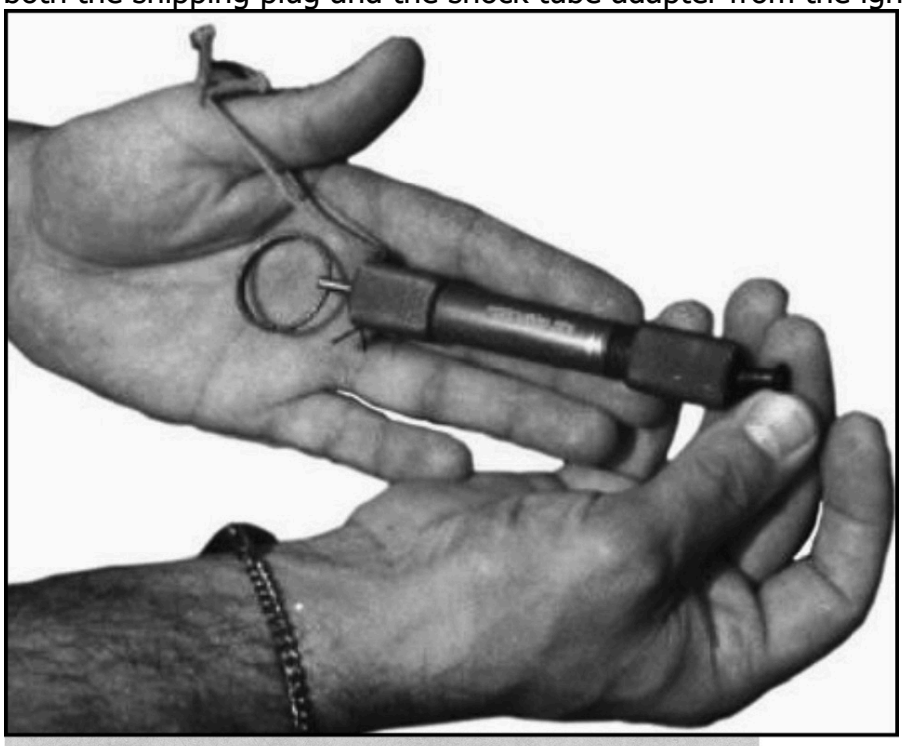


Figure 14-12. Preparation of M81 fuse igniter.

2. Cut off the sealed end of the M14 time-delay fuse (Figure 14-13), and insert it into the end cap of the M81. Tighten (finger-tight) by turning the end cap clockwise.

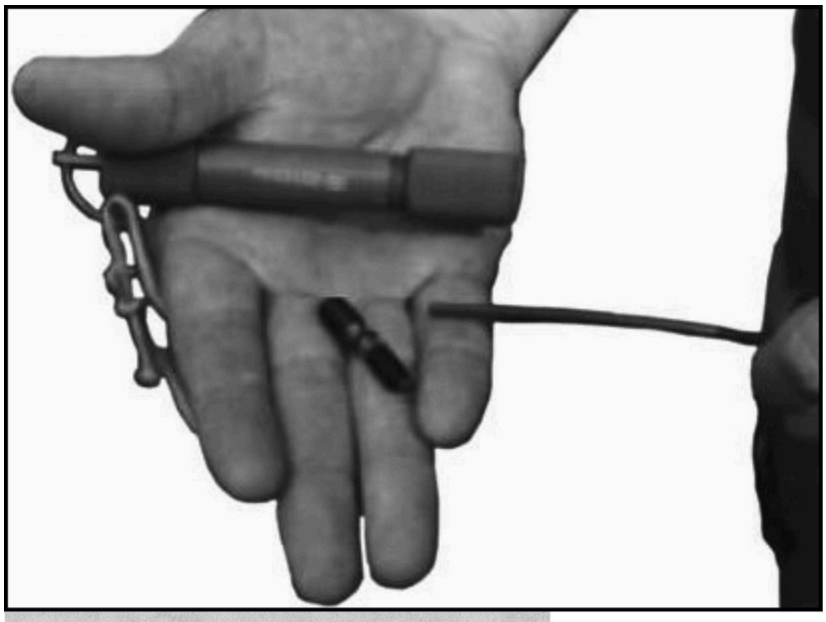


Figure 14-13. M81 fuse igniter with the M14 time-delay fuse.

3. Attach the blasting-cap end of the M14 time-delay fuse to the existing detonating-cord ring/line main using either an M9 holder or adhesive tape. If using tape, ensure it is at least six inches from the end of the detonating cord.
    a. Attach the M14 blasting cap using the M9 holder (the preferred method).
    b. Open both hinged flaps of the M9 holder.
    c. Insert the blasting cap into the M9 holder and close the small hinged flap.
    d. Form a bight six inches from the end of the detonating cord, lay it in the M9 holder, and close the hinged flap.
    e. Secure the detonating cord into the M9 holder (Figure 14-14). Secure the door with adhesive tape.

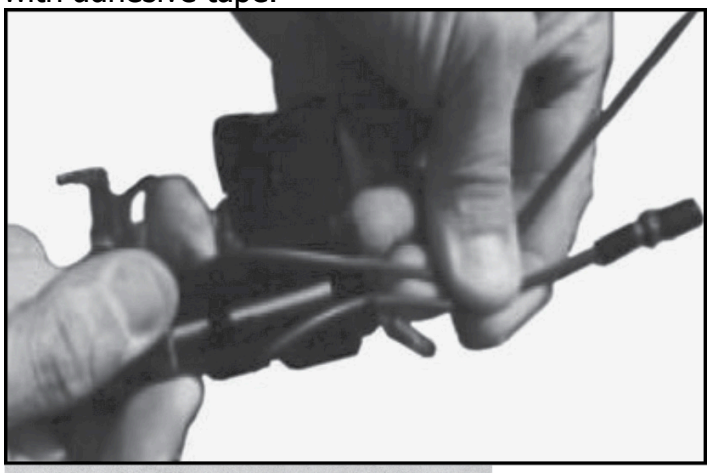


Figure 14-14. M81 fuse igniter with the M9 holder.

Note: Do not loop more than two shock tubes in the M9 holder.

1. Construct a nonelectric initiating assembly using the M11 branch line and the M12 transmission line.
    a. Place the M11 branch line's blasting cap under a sandbag near the detonating-cord firing system.
    b. Attach the M11 branch line to the M12 transmission line by forming a bight at the end of the M11, laying it in the attached M9 holder on the M12, and closing the hinged flap. Tape and secure the M11 into place. Place the M9 holder, along with the M12, under the same sandbag as the M11 blasting cap.
    c. Retrieve the M11 blasting cap from under the sandbag. Attach it to the detonating-cord firing system using an M9 holder as described above using either the M14 or adhesive tape. Ensure the tape is at least six inches from the end of the detonating cord.
    d. Secure the transmission line to a nearby anchor point and run the M12 transmission line back to the initiating point.
2. Cut the sealed end of the M12 transmission line at the initiating point, and attach an M81 fuse igniter as described above for the M14 time-delay fuse (Figure 14-15).

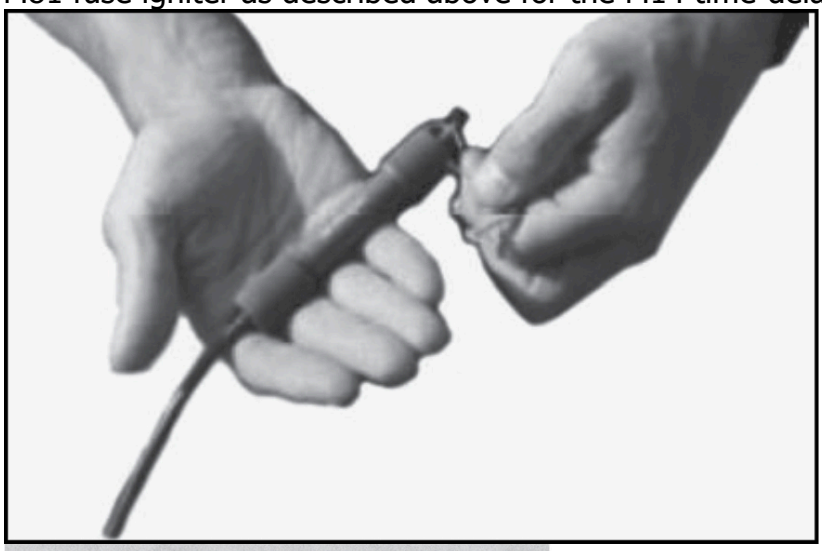


Figure 14-15. M81 fuse igniter with the M14 time-delay fuse.

Note: MDI systems come with short, clear plastic tubes used for repair. The shock tube repair procedure is outlined in TM 9-1375-213-12, *Army Demolition*.

3. Firing procedure for a nonelectric initiating assembly with MDI.
    a. Squeeze the spread legs of the safety cotter pin together.
    b. Use the safety pin's cord to remove the safety cotter pin from the igniter's body.
    c. Grasp the igniter body firmly with one hand, with the pull ring fully accessible to the other hand. To actuate, sharply pull the igniter's pull ring. The igniter can burn at extremely high temperatures.

WARNING

★ When using MDI in extreme cold temperatures and/or high altitudes, dual prime and dual initiate the charges.

d. Ensuring that smoke is coming from the fuse (or out of the vent hole in the igniter), remove the igniter and withdraw to a safe distance or to appropriate cover.

MISFIRES

The most common cause of a misfire in a shock-tube firing system is the initiating element, usually an M81 igniter. However, the most common failure with the M81 is primer failure to fire. To correct this, recock the M81 by pushing in on the pull rod to reengage the firing pin and then actuate the igniter again. If, after two retries, the M81 does not result in firing, cut the shock tube, replace the igniter with a new one, and repeat the firing procedure.

Another misfire mode with the M81 is the primer fires but blows the shock tube out of its securing mechanism without it firing. (This is usually due to the shock tube not being properly inserted and secured in the igniter.) To correct this problem, cut about 91 centimeters (3 feet) from the end of the shock tube, replace it with a new igniter, and repeat the firing procedure.

Note: Your supervisor needs to be involved to identify and correct any additional misfire problems. The correct procedure to implement for all possible misfires is in FM 3-34.214 (*Explosives and Demolitions*).

SECTION III. OBSTACLES

This section discusses how to breach and cross a minefield or wire obstacle.

BREACH AND CROSS A MINEFIELD

In combat, enemy units use obstacles to stop, slow, or channel their opponent's movement. Because of that, you may have to bypass or breach (make a gap through) those obstacles in order to continue your mission. There are many ways to breach a minefield. One way is to probe for and mark mines to clear a footpath through the minefield.

PROBING FOR MINES

1. Leave your rifle and LCE with another soldier in the team.
2. Leave on your Kevlar helmet and vest to protect you from possible blasts.
3. Get a wooden stick about 30 centimeters (12 inches) long for a probe and sharpen one of the ends. *Do not use a metal probe.*

DANGER

★ Do *not* use a metal probe.

4. Place the unsharpened end of the probe in the palm of one hand with your fingers extended and your thumb holding the probe.
5. Probe every 5 centimeters (2 inches) across a l-meter front. Push the probe gently into the ground at an angle less than 45 degrees (Figure 14-16).

Figure 14-16. Mine probe.

6. Kneel (or lie down) and feel upward and forward with your free hand to find trip wires and pressure prongs before starting to probe.
7. Put just enough pressure on the probe to sink it slowly into the ground. If the probe does not go into the ground, pick or chip the dirt away with the probe and remove it by hand.
8. Stop probing when the probe hits a solid object.
9. Remove enough dirt from around the object to find out what it is.
10. Clear a lane in depth of 10-meter (33-feet) intervals and ensure the lane overlaps (Figure 14-17).

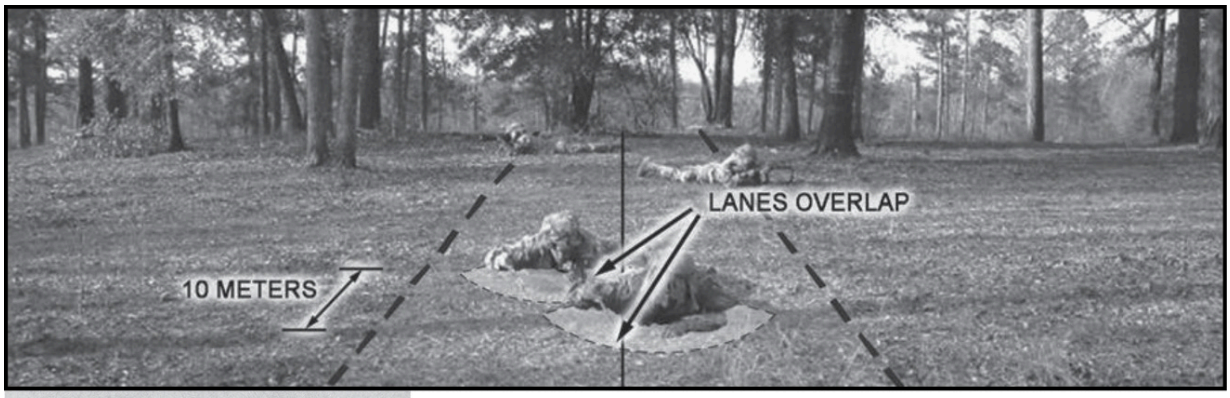


Figure 14-17. Lanes.

MARKING THE MINE

Remove enough dirt from around it to see what type of mine it is. Mark it and report its exact location to your leader. There are several ways to mark a mine. How it is marked is not as important as having others understand the marking. A common way to mark a mine is to tie a piece of paper, cloth, or engineer tape to a stake and put the stake in the ground by the mine (Figure 14-18).

Figure 14-18. Knot toward mine.

CROSSING THE MINEFIELD

Once a footpath has been probed and the mines marked, a security team should cross the minefield to secure the far side (Figure 14-19). After the far side is secure, the rest of the unit should cross.

Figure 14-19. Marked mines.

BREACH AND CROSS A WIRE OBSTACLE

Breaching a wire obstacle may require stealth; for example, when done by a patrol. It may not require stealth during an attack. Breaches requiring stealth are normally done with wire cutters. Other breaches are normally done with bangalore torpedoes and breach kits. This paragraph discusses how to probe for and mark mines, as well as cross minefields:

CUTTING THE WIRE

This paragraph discusses how to cut and cross wire.

To cut through a wire obstacle with stealth—

1. Cut only the lower strands and leave the top strand in place; this decreases the likelihood that the enemy will discover the gap.
2. Cut the wire near a picket. To reduce the noise of a cut, have another soldier wrap cloth around the wire and hold the wire with both hands. Cut part of the way through the wire between the other soldier's hands and have him bend the wire back and forth until it breaks. If you are alone, wrap cloth around the wire near a picket, partially cut the wire, and then bend and break the wire.

To breach an obstacle made of concertina:

1. Cut the wire and stake it back to keep the breach open.

2. Stake the wire back far enough to allow room for soldiers to move through the obstacle.

USING A BANGALORE TORPEDO

A bangalore torpedo comes in a kit that has ten torpedo sections, ten connecting sleeves, and one nose sleeve (Figure 14-20). Use only the number of torpedo sections and connecting sleeves needed.

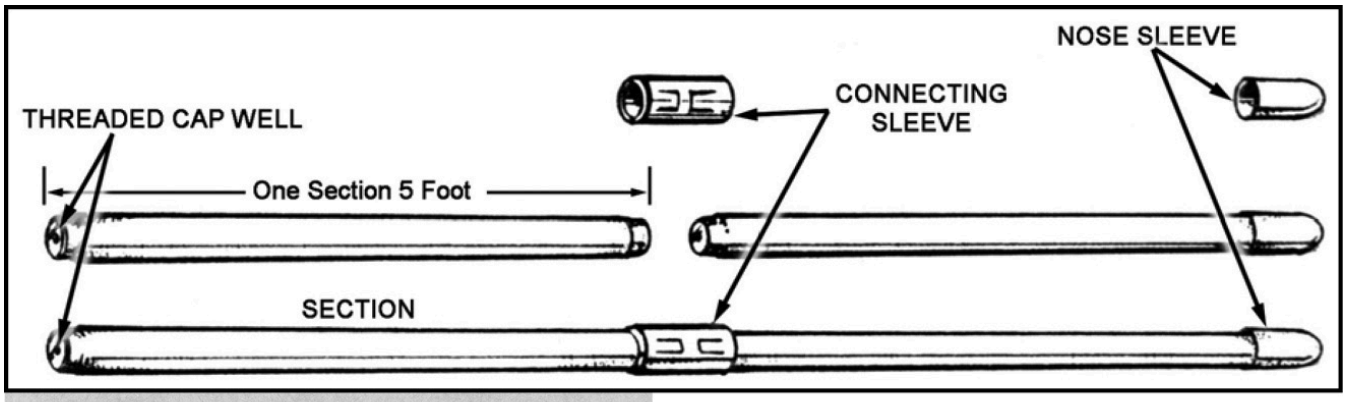


Figure 14-20. Bangalore torpedo.

All torpedo sections have a threaded cap well at each end so they may be assembled in any order. Use the connecting sleeves to connect the torpedo sections together. To prevent early detonation of the entire bangalore torpedo, should you actually hit a mine while pushing the bangalore through the obstacle, attach an improvised (wooden) torpedo section to its end. That section can be made out of any wooden pole or stick equal to the size of a real torpedo section. Attach the nose sleeve to the end of the wooden section.

After the bangalore torpedo has been assembled and pushed through the obstacle, prime it with either detonation cord or with the MDI nonelectric firing system (Figure 14-21); only the MDI method will be described. The bangalore torpedo is primed using an M11, M16, M14, or M18 blasting cap. Insert the blasting cap into the cap well in the end section of the charge and secure it with a priming adapter. If a priming adapter is unavailable, use tape to hold the blasting cap firmly in place.

Figure 14-21. Priming of bangalore torpedo with MDI.

Before the bangalore torpedo is fired, ensure you seek available cover (at least 35 meters away) from the safety danger zone. You will use wire cutters to cut away any wire not cut by the explosion.

USING A MK7 ANTIPERSONNEL OBSTACLE-BREACHING SYSTEM (APOBS)

The APOBS is an explosive line charge system that allows safe breaching through complex antipersonnel obstacles (Figure 14-22). The APOBS is used to conduct deliberate or hasty breaches through enemy antipersonnel minefields and multistrand wire obstacles. A lightweight 125-pound (57-kilogram) system with delay and command firing modes, it can be carried by two soldiers with backpacks and can be deployed within 30 to 120 seconds.

Figure 14-22. MK7 Antipersonnel Obstacle-Breaching System (APOBS).

Once set in place, the APOBS rocket is fired from a 35-meter standoff position, sending the line charge with fragmentation grenades over the minefield and/or wire obstacle. The grenades neutralize or clear the mines and sever the wire, effectively clearing a footpath 2 to 3 feet (0.6 to 1 meter) wide by 148 feet (50 yards or 45 meters) long.

The APOBS has significant advantages over the bangalore torpedo, which weighs 145 kilograms (320 pounds) more, takes significantly longer to set up, and cannot be deployed from a standoff position. It also reduces the number of soldiers required to carry and employ the system from twelve soldiers to two.

CHAPTER 15

UNEXPLODED ORDNANCE AND IMPROVISED EXPLOSIVE DEVICES

Unexploded ordnance (UXO) and improvised explosive devices (IEDs) pose deadly and pervasive threats to soldiers and civilians in operational areas all over the world. Soldiers at all levels must know about these hazards, as well as how to identify, avoid, and react to them properly. Use the information in this chapter to learn about the UXO and IED hazards you could face and the procedures you can use to protect yourself.

SECTION I. UNEXPLODED ORDNANCE

Being able to recognize a UXO is the first and most important step in reacting to a UXO hazard. There is a multitude of ordnance used throughout the world, and it comes in all shapes and sizes. This chapter explains and shows some of the general identifying features of the different types of ordnance, both foreign and U.S. In this chapter, ordnance is divided into four main types: dropped, projected, and thrown.

DROPPED ORDNANCE

Regardless of its type or purpose, dropped ordnance is dispensed or dropped from an aircraft. Dropped ordnance is divided into three subgroups: bombs; dispensers, which contain submunitions; and submunitions.

BOMBS

Bombs can be general purpose or chemical-agent filled.

General Purpose Bombs

General purpose bombs come in many shapes and sizes depending on the country that made them and how they are to be used. Most of these bombs are built the same and consist of a metal container, a fuse, and a stabilizing device. The metal container (called the bomb body) holds an explosive or chemical filler. The body may be in one or multiple pieces.

Chemical-Agent Filled Bombs

Chemical-agent filled bombs are built the same as general purpose bombs. They have a chemical filler in place of an explosive filler. Color codes and markings may be used to identify chemical bombs. For example, the U.S. and NATO color code for chemical munitions is a gray background with a dark green band. The former Soviet Union uses a combination of green, red, and blue markings to the nose and tail sections to indicate chemical agents. Soviet bombs all have a gray background.

Fuses

Fuses used to initiate bombs are either mechanical or electrical, and are generally placed in the bomb's nose or tail section, internally or externally. They may be hidden, as when covered by a fin assembly. As shipped, fuses are in a safe (unarmed) condition and function only once armed.

Mechanical—Mechanical fusing, whether in the nose or in the tail, is generally armed by some type of arming vane. The arming vane assembly operates like a propeller to line up all of the fuse parts so the fuse will become armed.

Electrical—Electrical fuses have an electric charging assembly in place of an arming vane. They are armed by using power from the aircraft. Just before the pilot releases the bomb, the aircraft supplies the required electrical charge to the bomb's fuse. Action of the fuse may be impact, proximity, or delay. Impact fuses function when they hit the target. Proximity fuses function when bombs reach a predetermined height above the target.

Delay—Delay fuses contain an element that delays explosion for a fixed time after impact. To be safe, personnel should consider that all bombs have the most dangerous kind of fusing, proximity or delay. Approaching a proximity or delay-fused bomb causes unnecessary risk to personnel and equipment. Although it should function before it hits the target, proximity fusing may not always do so. Once the bomb hits the ground, the proximity fuse can still function. It can sense a change in the area around the bomb and detonate. Delay fusing can be mechanical, electrical, or chemical. Mechanical- and electrical-delay fuses are nothing more than clockwork mechanisms. The chemical-delay fuse uses a chemical compound inside the fuse to cause a chemical reaction with the firing system. Delay fusing times can range from minutes to days.

DISPENSERS

Dispensers may be classified as another type of dropped ordnance. Like bombs, they are carried by aircraft. Their payload, however, is smaller ordnance called submunitions. Dispensers come in a variety of shapes and sizes depending on the payload inside. Some dispensers are reusable, and some are one-time-use items.

SUBMUNITIONS

Submunitions are classified as bomblets, grenades, or mines. They are small explosive-filled or chemical-filled items designed for saturation coverage of a large area. Each of these delivery systems disperses its payload of submunitions while still in flight, and the submunitions drop over the target. On the battlefield, submunitions are widely used in both offensive and defensive missions. Submunitions are used to destroy an enemy in place (impact) or to slow or prevent enemy movement away from or through an area (area denial). Impact submunitions go off when they hit the ground.

ANTIPERSONNEL BALL-TYPE SUBMUNITIONS

Area-denial submunitions, including the family of scatterable mines (FASCAM), have a limited active life and self-destruct after their active life has expired. The ball-type submunitions shown in Figure 15-1 are antipersonnel. They are very small and are delivered on known concentrations of enemy personnel.

Figure 15-1. Antipersonnel, ball-type submunitions.

Note: Never approach a dispenser or any part of a dispenser you find on the battlefield. The payload of submunitions always scatters in the area where the dispenser hit the ground.

Area-Denial Submunitions—The submunition shown in Figure 15-2 is scattered across an area and, like a land mine, it will not blow up until pressure is put on it. They are area-denial, antipersonnel submunitions (FASCAM). These submunitions are delivered into areas for use as mines. When they hit the ground, trip wires kick out up to twenty feet from the mine. All area-denial submunitions use anti-disturbance fusing with self-destruct fusing as a backup. The self-destruct time can vary from a couple of hours to as long as several days.

Figure 15-2. Area-denial submunitions (conventional).

Antipersonnel and Anti-Materiel (AMAT) Submunitions—The DP submunition shown in Figure 15-3 has a shaped charge for penetrating hard targets but is also used against personnel. These submunitions are delivered by artillery or rockets. The arming ribbon serves two purposes, as it arms the fuse as the submunition comes down and also stabilizes the submunition so that it hits the target straight on.

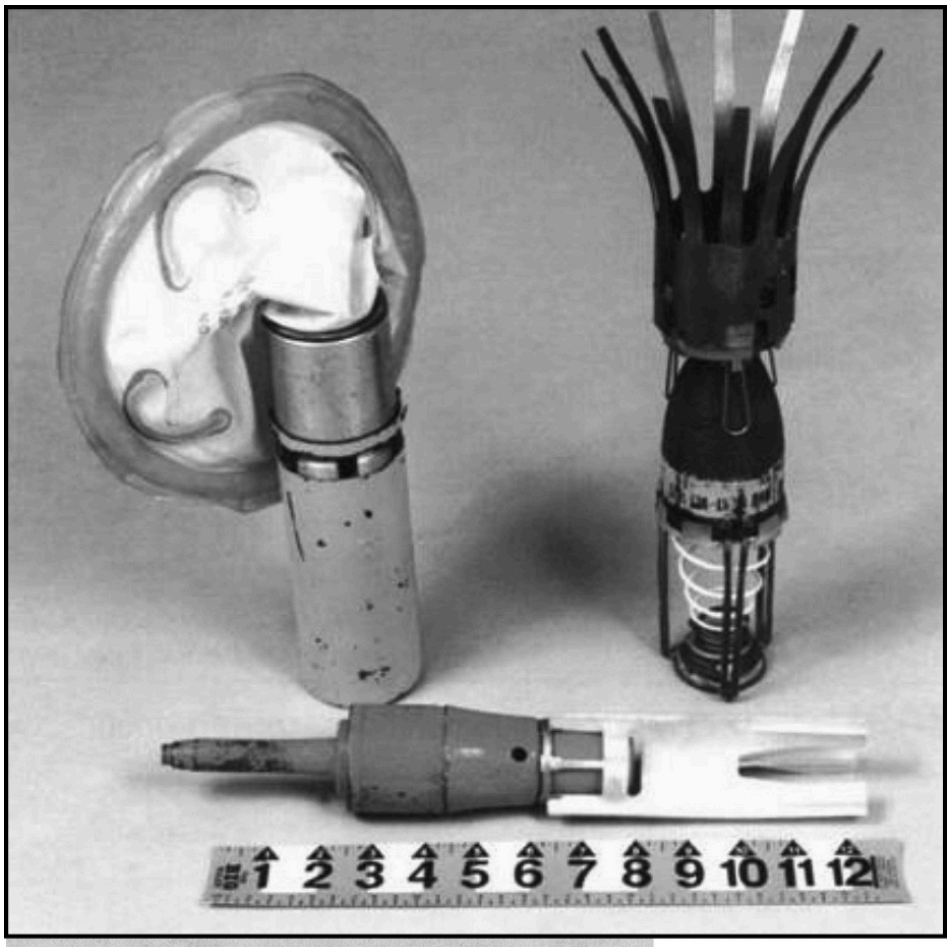


Figure 15-3. Antipersonnel/AMAT submunitions (conventional).

AMAT and Antitank Submunitions—The AMAT or antitank submunitions shown in Figure 15-4 are designed to destroy hard targets such as vehicles and equipment. They are dispersed from an aircraft-dropped dispenser and function when they hit a target or the ground. Drogue parachutes stabilize these submunitions in flight so they hit their targets straight on. Others have a fin assembly that stabilizes the submunition instead of the drogue parachute.

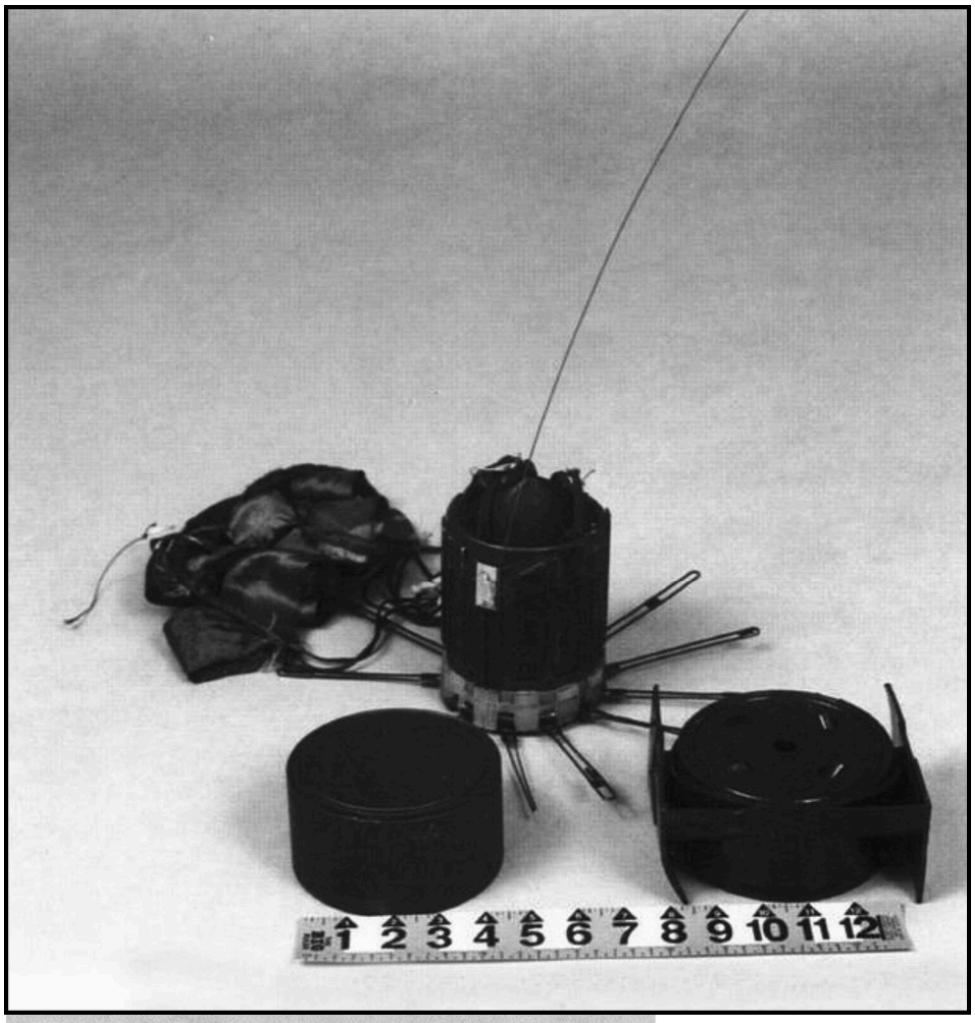


Figure 15-4. AMAT/antitank submunitions (conventional).

Antitank Area-Denial Submunitions—Antitank area-denial submunitions can be delivered by aircraft, artillery, and even some engineer vehicles. These FASCAMs have magnetic fusing and function when they receive a signal from metallic objects. These submunitions, similar to the antipersonnel area-denial submunitions, also have anti-disturbance and self-destruct fusing. Antitank and antipersonnel area-denial mines are usually found deployed together.

PROJECTED ORDNANCE

All projected ordnance is fired from some type of launcher or gun tube. Projected ordnance falls into the following five subgroups:

- Projectiles.
- Mortars.

- Rockets.
- Guided missiles.
- Rifle grenades.

PROJECTILES

Projectiles range from 20 millimeters to 16 inches in diameter and from 2 inches to 4 feet in length. They can be filled with explosives, chemicals (to include riot-control agents), white phosphorus (WP), illumination flares, or submunitions. Projectile bodies can be one piece of metal or multiple sections fastened together.

Projectiles, like bombs, can have impact or proximity fusing. They can also be fused with time-delay fusing that functions at a preset time after firing. For safety reasons, all projectiles should be considered as having proximity fusing. Getting too close to proximity fusing will cause the fuse to function, and the projectile will blow up. Depending on the type of filler and design of the projectile, the fuse can be in the nose or base.

There are two ways projectiles are stabilized—by spin or fin. Spin-stabilized projectiles use rotating bands near the rear section to stabilize the projectile. Riding along the internal lands and grooves of the gun tube, these bands create a stabilizing spin as the projectile is fired. Fin-stabilized projectiles may have either fixed fins or folding fins. Folding fins unfold after the projectile leaves the gun tube to stabilize the projectile.

MORTARS

Mortars range from 45 millimeters to 280 millimeters in diameter. Like projectiles, mortar shells can be filled with explosives, toxic chemicals, WP, or illumination flares. Mortars generally have thinner metal bodies than projectiles but use the same kind of fusing. Like projectiles, mortars are stabilized in flight by fin or spin. Most mortars are fin stabilized.

ROCKETS

A rocket may be defined as a self-propelled projectile. Unlike guided missiles, rockets cannot be controlled in flight. Rockets range in diameter from 37 millimeters to more than 380 millimeters. They can range in length from 1 foot to more than 9 feet. There is no standard shape or size for rockets. All rockets consist of a warhead section, motor section, and fuse. They are stabilized in flight by fins or by canted nozzles that are attached to the motor.

The warhead is the portion of the rocket that produces the desired effect. It can be filled with explosives, toxic chemicals, WP, submunitions, or illumination flares. The motor propels the rocket to the target. The fuse is the component that initiates the desired effect at the desired time. Rockets use the same type of fusing as projectiles and mortars. The fuse may be located in the nose or internally between the warhead and the motor.

Generally, the rocket motor will not create an additional hazard because the motor is usually burned out shortly after the rocket leaves the launcher.

GUIDED MISSILES

Guided missiles are like rockets, as they consist of the same parts; however, missiles are guided to their target by various guidance systems. Some of the smaller missiles, such as the tube-launched, optically tracked, wire-guided (TOW) and Dragon missiles, are wire-guided by the gunner to their targets.

Larger missiles, such as the phased-array, tracking radar intercept on target (PATRIOT) and the Sparrow are guided by radar to their target. Guided missiles use internal, proximity fusing and therefore, do not approach any guided missile you find laying on the battlefield.

RIFLE GRENADES

Rifle grenades look like mortars and are fired from a rifle that is equipped with a grenade launcher or an adapter. Many countries use rifle grenades as an Infantry direct-fire weapon. Some rifle grenades are propelled by specially designed blank cartridges, while others are propelled by standard ball cartridges. Rifle grenades may be filled with high explosives (HEs), WP, illumination flares, or colored screening smoke. They range in size from the small antipersonnel rifle grenade to the larger antitank rifle grenade. Antipersonnel rifle grenades use impact fusing. Some rifle grenades, such as the antitank version, have internal fusing behind the warhead; this type of fusing still functions on impact with the target.

THROWN ORDNANCE (HAND GRENADES)

Hand grenades are small items that may be held in one hand and thrown. All grenades have three main parts: a body, a fuse with a pull ring and safety clip assembly, and a filler. Never pick up a grenade you find on the battlefield, even if the spoon and safety pin are still attached. All grenades found lying on a battlefield should be considered booby-trapped. Thrown ordnance, commonly known as hand grenades, can be classified by use as follows:

- Fragmentation (also called defensive).
- Offensive.
- Antitank.
- Smoke.
- Illumination.

FRAGMENTATION GRENADES

Fragmentation grenades are the most common type of grenade and may be used as offensive or defensive weapons (see Figure 15-5). They have metal or plastic bodies that hold explosive fillers. These grenades produce casualties by high-velocity projection of fragments when they blow up. The fragmentation comes from the metal body or a metal fragmentation sleeve that can be internal or attached to the outside of the grenade. These grenades use a burning-delay fuse that functions three to five seconds after the safety lever is released.

Figure 15-5. Fragmentation grenades.

OFFENSIVE GRENADES

Offensive grenades have a plastic or cardboard body and are not designed to have a lot of fragmentation. Their damage is caused from the overpressure of the explosive blast. These grenades use a burning-delay fuse that functions three to five seconds after the safety lever is released.

ANTITANK GRENADES

Antitank grenades are designed to be thrown at tanks and other armored vehicles. They have a shaped-charge explosive warhead and are stabilized in flight by a spring-deployed parachute or a cloth streamer (Figure 15-6). These grenades use impact fuses.

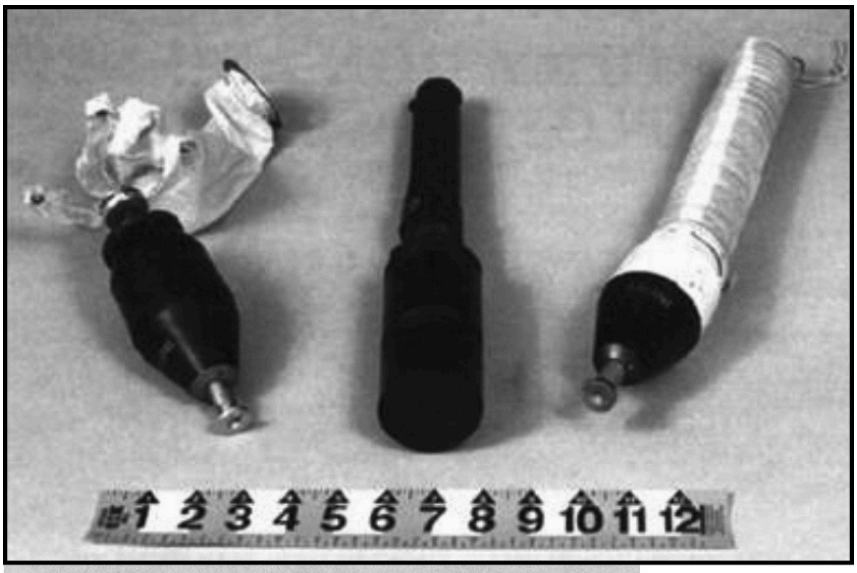


Figure 15-6. Antitank grenades.

SMOKE GRENADES

The two types of smoke grenades are bursting and burning (Figure 15-7). They may be made of rubber, metal, or plastic. Bursting-type smoke grenades are filled with WP and blow up when the fuse functions. These grenades use a burning-delay fuse that functions three to five seconds after the safety lever is released. Burning-type smoke grenades produce colored smoke and use an instant-action fuse. There is no delay once the spoon is released. This is the same type of grenade that is used to dispense riot-control agents.

Figure 15-7. Smoke grenades.

ILLUMINATION GRENADES

Illumination grenades are used for illuminating, for signaling, and as an incendiary agent (Figure 15-8). The metal body breaks apart after the fuse functions and dispenses an illumination flare. This type of grenade uses a burning-delay fuse that functions three to five seconds after the safety lever is released.

Figure 15-8. U.S. illumination grenade.

SECTION II. IMPROVISED EXPLOSIVE DEVICES

IEDs are nonstandard explosive devices that target both soldiers and civilians. IEDs range from crude homemade explosives to extremely intricate remote-controlled devices. They instill fear and diminish the resolve of our forces by escalating casualties. The sophistication and range of IEDs continue to increase as technology improves, and as our enemies gain experience.

TYPES

IEDs include timed explosive devices, impact-detonated devices, and vehicle-borne bombs:

TIMED EXPLOSIVE DEVICES

These can either be detonated by electronic means, possibly even by a cell phone; or by a combination of wire and either a power source or timed fuse.

IMPACT-DETONATED DEVICES

These detonate after any kind of impact, such as after being dropped or thrown.

VEHICLE-BORNE BOMBS

Also known as car bombs, these explosive-laden vehicles are detonated via electronic command wire, wireless remote control, or a timed device(s). A driver is optional. Anything from a small sedan to a large cargo truck or cement truck (Figure 15-9) can be used. The size of the vehicle limits the size of the device. Bigger vehicles can carry much more explosive material, so they can cause more damage than smaller ones. Device functions also vary. Some possible signs of a car bomb include—

ATF	Vehicle Description	Maximum Explosives Capacity	Lethal Air Blast Range	Minimum Evacuation Distance	Falling Glass Hazard
	Compact Sedan	500 Pounds 227 Kilos (In Trunk)	100 Feet 30 Meters	1,500 Feet 457 Meters	1,250 Feet 381 Meters
	Full-Size Sedan	1,000 Pounds 455 Kilos (In Trunk)	125 Feet 38 Meters	1,750 Feet 534 Meters	1,750 Feet 534 Meters
	Passenger Van or Cargo Van	4,000 Pounds 1,818 Kilos	200 Feet 61 Meters	2,750 Feet 838 Meters	2,750 Feet 838 Meters
	Small Box Van (14 Ft. box)	10,000 Pounds 4,545 Kilos	300 Feet 91 Meters	3,750 Feet 1,143 Meters	3,750 Feet 1,143 Meters
	Box Van or Water/Fuel Truck	30,000 Pounds 13,636 Kilos	450 Feet 137 Meters	6,500 Feet 1,982 Meters	6,500 Feet 1,982 Meters
	Semi-Trailer	60,000 Pounds 27,273 Kilos	600 Feet 183 Meters	7,000 Feet 2,134 Meters	7,000 Feet 2,134 Meters

Figure 15-9. Vehicle IED capacities and danger zones.

- A vehicle riding low, especially in the rear, and especially if the vehicle seems empty. However, because explosive charges can be concealed in the side panels, the weight may be distributed evenly. Even so, the vehicle may still ride low, indicating excessive weight.
- Large boxes, satchels, bags, or any other type of container in plain view such as on, under, or near the front seat of the vehicle.
- Wires or rope-like material coming out the front of the vehicle and leading to the rear passenger or trunk area.
- A timer or switch in the front of a vehicle. The main charge is usually out of sight, and as previously stated, often in the rear of the vehicle.

- Unusual or very strong fuel-like odors.
- An absent or suspiciously behaving driver.

IDENTIFICATION

The following are telltale signs of IEDs:

- Wires.
- Antennas.
- Detcord (usually red in color).
- Parts of ordnance exposed.

COMPONENTS

The following are components of an IED:

- Main charge (explosives; Figure 15-10).

Figure 15-10. Main charge (explosives).

- Casing (material around the explosives; Figure 15-11).

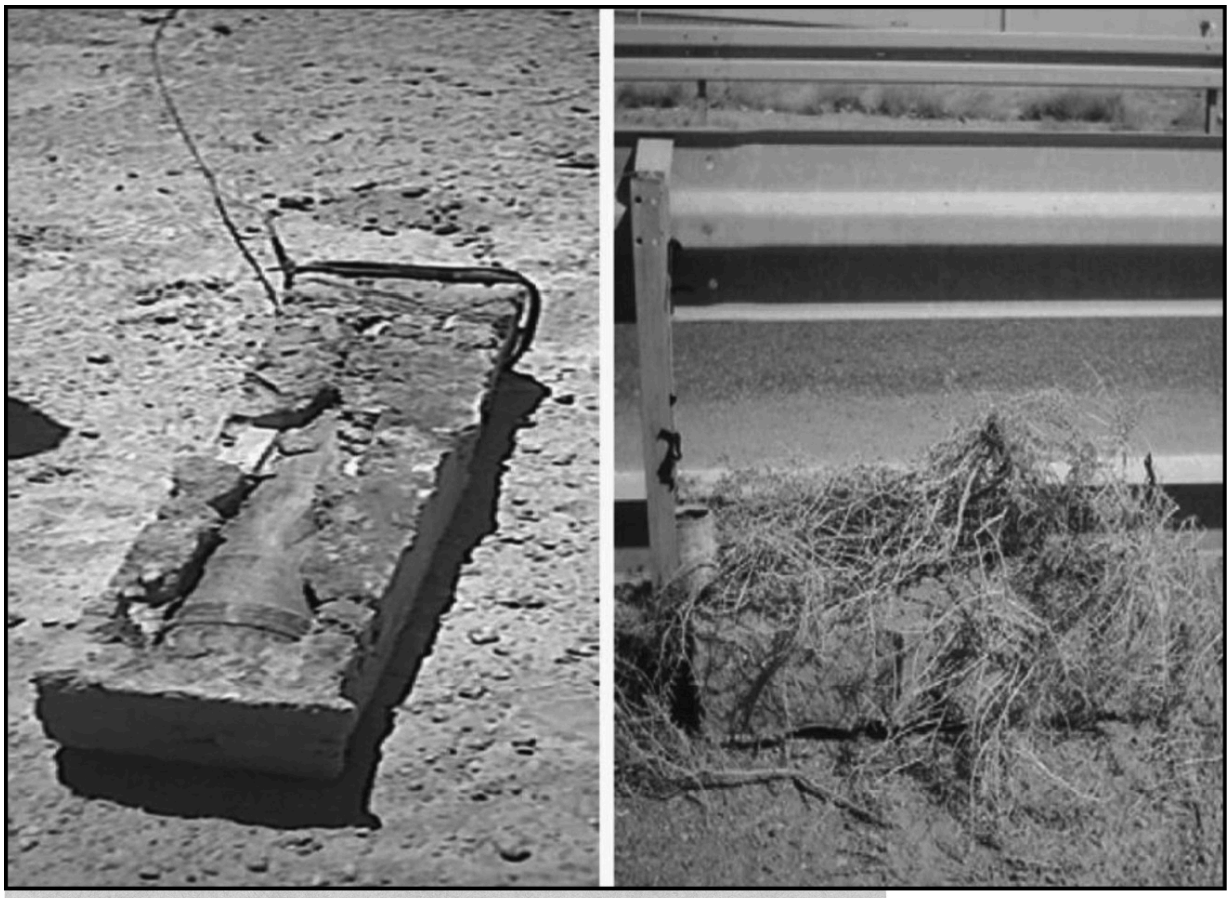


Figure 15-11. Casing (material around the explosives).

- Initiators (command detonated, victim activated, and timer; Figure 15-12).

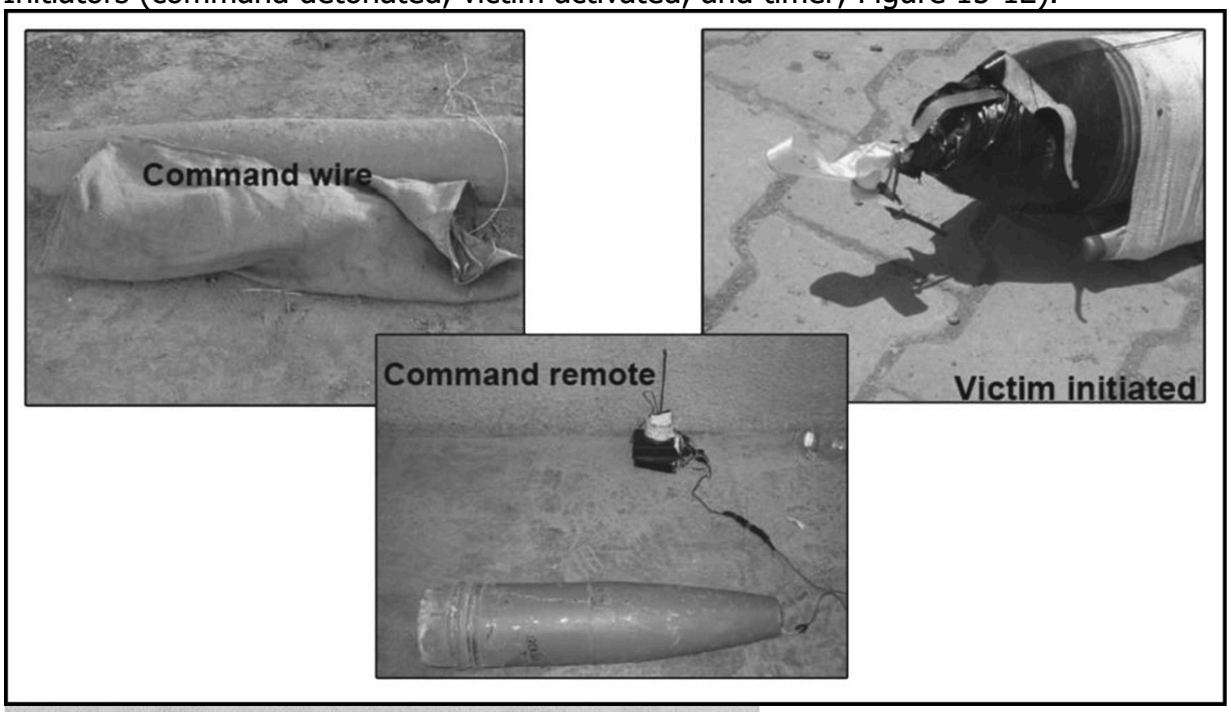


Figure 15-12. Initiators (command detonated, victim activated, with timer).

EXAMPLES

Figures 15-13 through 15-18 show example IED types and components. These photos are examples to train soldiers to recognize components of IEDs. Recognition is needed when soldiers conduct operations such as raids, traffic control points, or convoys and come across suspicious items.

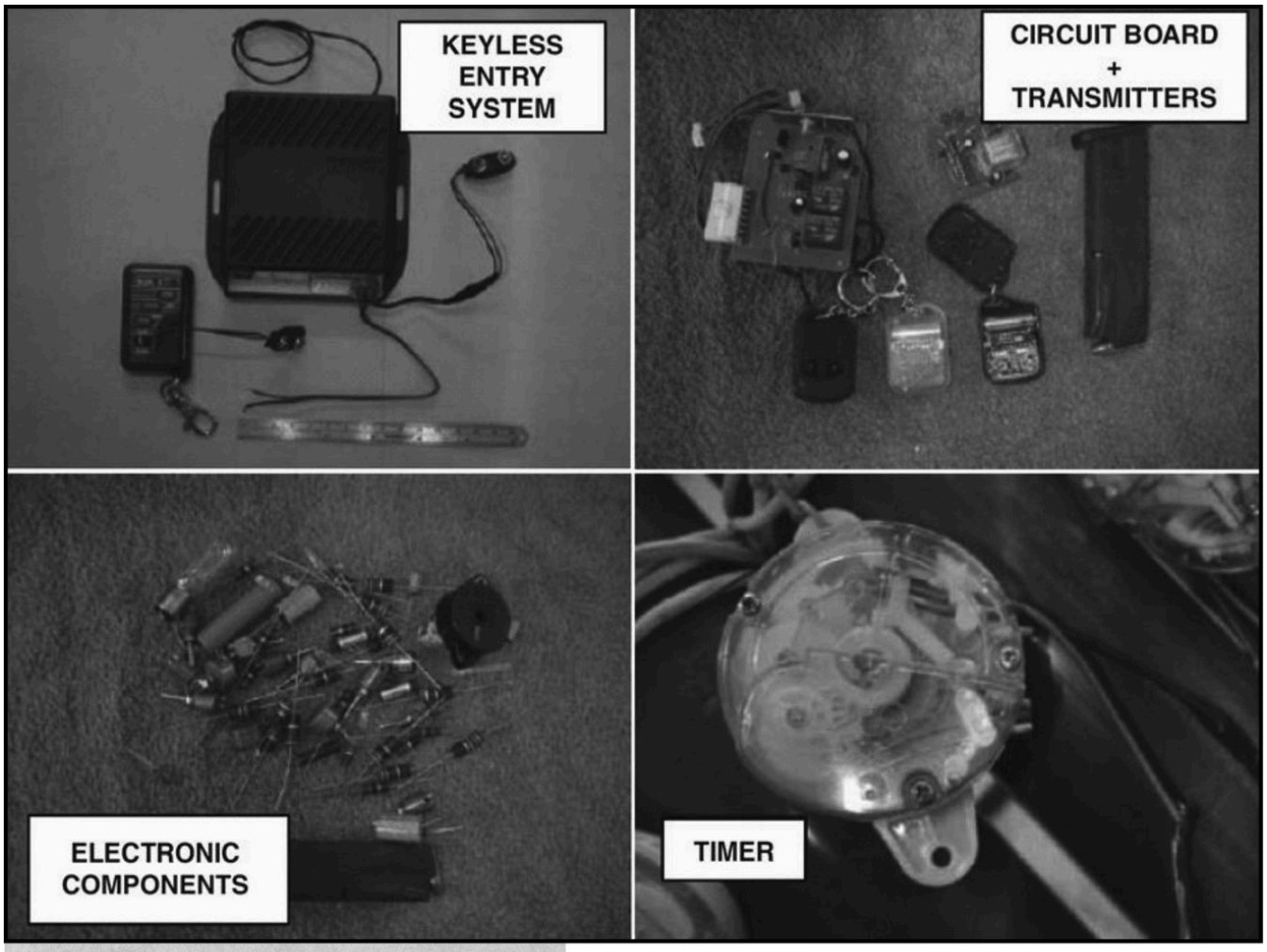


Figure 15-13. IED components.

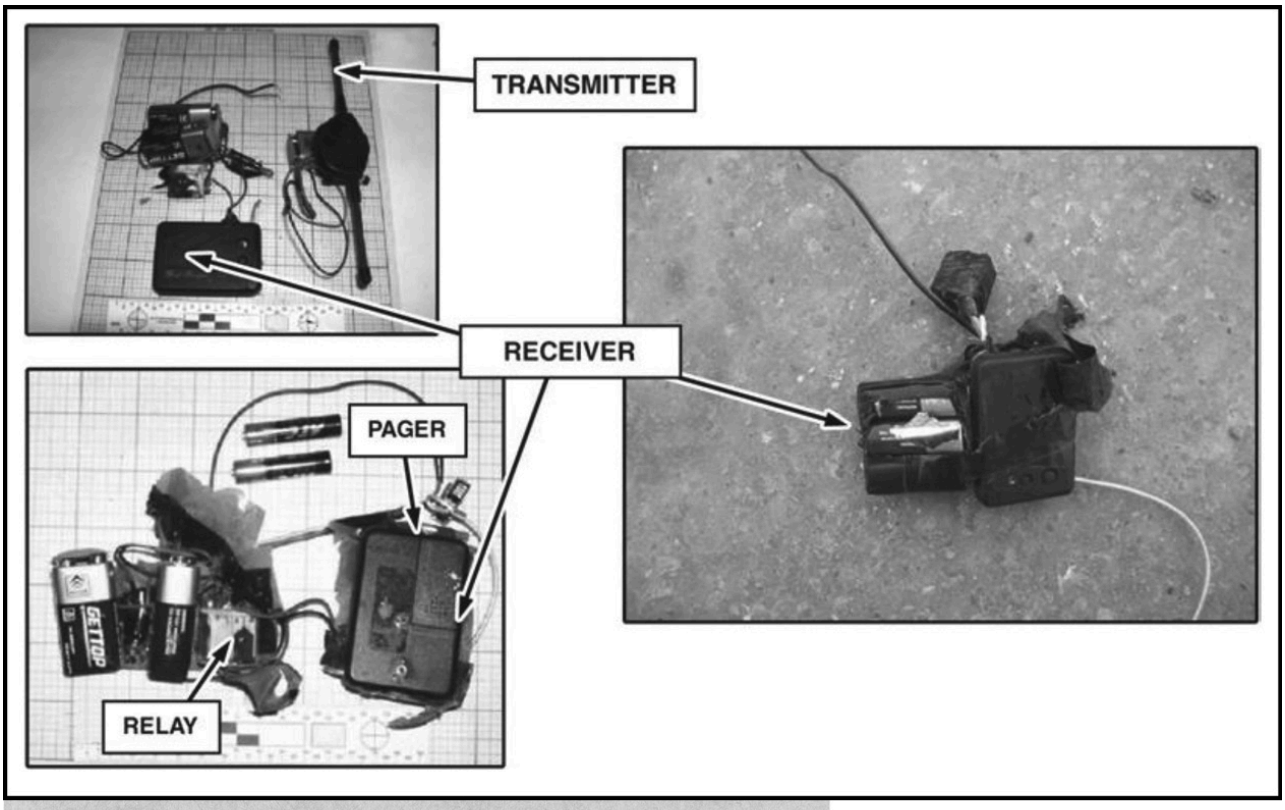


Figure 15-14. IED transmitters and receivers.

Figure 15-15. Common objects as initiators.

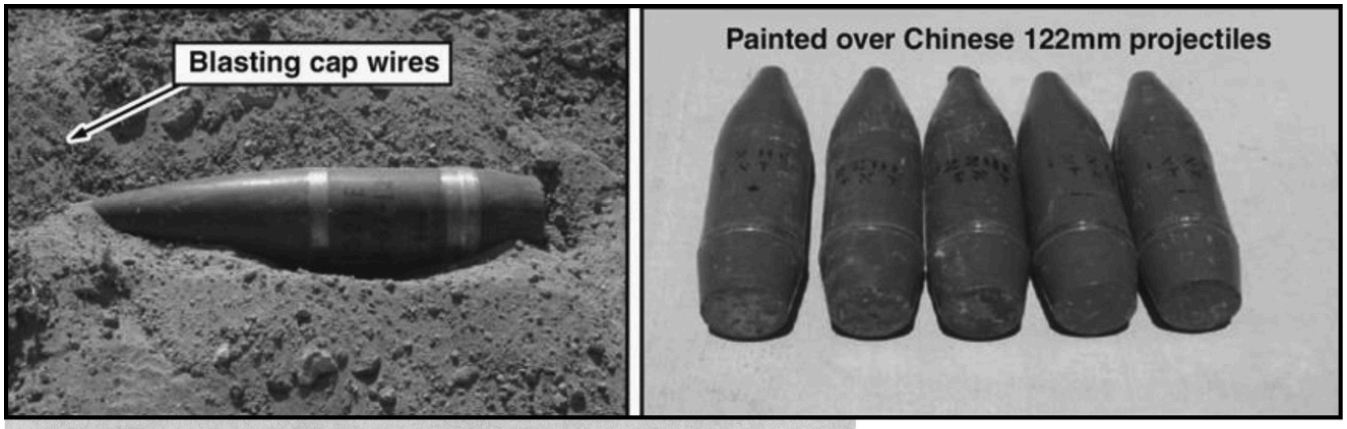


Figure 15-16. Unexploded rounds as initiators.

Figure 15-17. Emplaced IED with initiator.

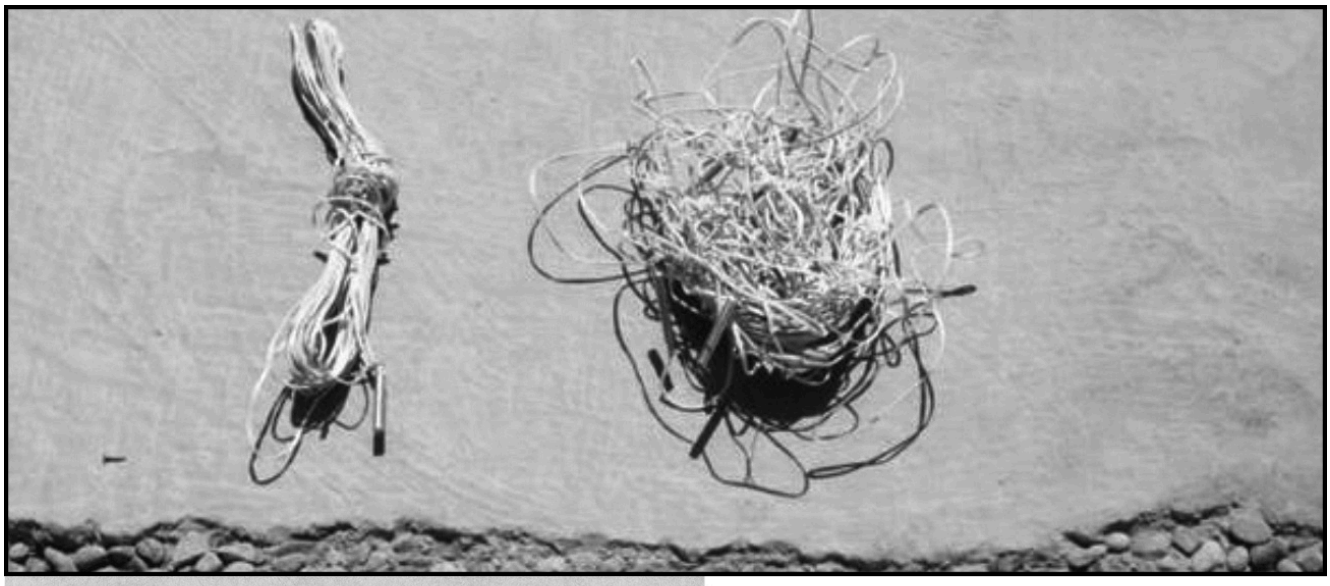


Figure 15-18. Electric blasting caps.

ACTIONS ON FINDING UXO

Many areas, especially previous battlefields, may be littered with a wide variety of sensitive and deadly UXO. Soldiers should adhere to the following precautions upon discovering a suspected UXO:

- Do not move toward the UXO. Some types of ordnance have magnetic or motion-sensitive fusing.
- Never approach or pick up UXO even if identification is impossible from a distance. Observe the UXO with binoculars if available.
- Send a UXO report (Figure 15-19) to higher command (see special segment below). Use radios at least 100 meters away from the ordnance. Some UXO fuses might be set off by radio transmissions.

Nine-Line UXO Incident Report

1. DTG: Date and time UXO was discovered.
2. Reporting Unit or Activity, and UXO Location: Grid coordinates.
3. Contact Method: How EOD team can contact the reporting unit.
4. Discovering Unit POC: MSE, or DSN phone number, and unit frequency or call sign.
5. Type of UXO: Dropped, projected, thrown, or placed, and number of items discovered.
6. Hazards Caused by UXO: Report the nature of perceived threats such as a possible chemical threat or a limitation of travel over key routes.
7. Resources Threatened: Report any equipment, facilities, or other assets threatened by the UXO.
8. Impact on Mission: Your current situation and how the UXO affects your status.
9. Protective Measures: Describe what you have done to protect personnel and equipment such as marking the area and informing local civilians.

Figure 15-19. Nine-Line UXO Incident Report.

- Mark the area with mine tape or other obvious material at a distance from the UXO to warn others of the danger. Proper markings will also help explosive ordnance disposal (EOD) personnel find the hazard in response to the UXO report.
- Evacuate the area while carefully scanning for other hazards.
- Take protective measures to reduce the hazard to personnel and equipment. Notify local officials and people in the area.

ACTIONS ON FINDING IEDS

Follow these basic procedures when IEDs are found:

- Maintain 360-degree security. Scan close in, far out, high, and low.
- Move away. Plan for 300 meters distance minimum (when possible) and adapt to your mission, enemy, terrain, troops, and equipment, time available, and civil considerations (METT-TC). Make maximum use of available cover. Get out of line of sight of IEDs.

- Always scan your immediate surroundings for more IEDs. Report additional IEDs to the on-scene commander.
- Try to confirm suspect IED. Always use optics. Never risk more than one person. Stay as far back as possible. When in doubt, back away and avoid touching.
- Cordon off the area. Direct people out of the danger area and do not allow anyone to enter besides those responsible for responding, such as EOD. Question, search, and detain suspects as needed. Check any and all locations that you move to for other IEDs.
- Report the situation to your higher command. Use the IED spot report shown in Figure 15-20.

IED SPOT REPORT

LINE 1.	DATE-TIME-GROUP: [State when the item was discovered.]
LINE 2.	UNIT:
LINE 3.	LOCATION OF IED: [Describe as specifically as possible.]
LINE 4.	CONTACT METHOD: [Radio frequency, call sign, POC.]
LINE 5.	IED STATUS: [Detonation or no detonation.]
LINE 6.	IED TYPE: [Disguised static / Disguised moveable / Thrown / Placed on TGT.]
LINE 7.	NUMBER OF IEDs:
LINE 8.	PERSONNEL STATUS:
LINE 6.	EQUIPMENT STATUS:
LINE 7.	COLLATERAL DAMAGE OR POTENTIAL FOR COLLATERAL DAMAGE:
LINE 8.	TACTICAL SITUATION: [Briefly describe current tactical situation.]
LINE 9.	REQUEST FOR: [QRF / EOD / MEDEVAC].
LINE 10.	LOCATION OF L/U WITH REQUESTED FORCE (S):

Figure 15-20. IED Spot Report.

APPENDIX

CHECKLISTS AND MEMORY AIDS

This appendix consolidates all of the checklists in this publication as well as other definitions such as Warrior Ethos, Soldier's Creed, Army Values, and more.

- Antipersonnel land mines, U.S. national policy on
- Army Values
- Camouflage face paint, application to skin
- Code of Conduct
- Communication methods, comparison of
- Decontamination Levels and Techniques
- First aid
- IED Spot Report
- IED, vehicle, capacities and danger zones
- Illness in the field, rules for avoiding
- Individual fighting positions, characteristics of
- Nine-Line UXO Incident Report
- MOPP Levels
- Personal predeployment checklist, example
- Potential indicators
- Prowords
- SALUTE format line by line
- Shelter checklist
- Soldier's Creed
- Survival
- Warrior Ethos

U.S. NATIONAL POLICY
ON ANTIPERSONNEL LAND MINES

On May 16, 1996, the president of the United States implemented a phased restriction and elimination of antipersonnel land mines. Implementation began with non-self-destructing mines but will eventually include all types of antipersonnel mines. This policy applies to all Infantry units either engaged in or training for operations worldwide. The use of non-self-destructing antipersonnel land mines is restricted to specific areas:

- Within internationally recognized national borders.
- In established demilitarized zones such as to defend South Korea.

Mines approved for use must be emplaced in an area with clearly marked perimeters. They must be monitored by military personnel and protected by adequate means to ensure the exclusion of civilians.

U.S. policy also forbids U.S. forces from using standard or improvised explosive devices as booby traps.

Except for South Korea–based units, and for units deploying to South Korea for training exercises, this policy forbids training with and employing inert M14 and M16 mines. This applies to units' home stations as well as at Combat Training Centers, except in the context of countermine or mine-removal training.

- *Training with live M14 mines is UNAUTHORIZED!*
- *Training with live M16 mines is authorized only for soldiers on South Korean soil.*

Exceptions:

This policy does not apply to standard use of antivehicular mines. Nor does it apply to training and using the M18 Claymore mine *in the command-detonated mode*.

When authorized by the appropriate commander, units may still use self-destructing antipersonnel mines such as the ADAM.

Authorized units may continue to emplace mixed minefields containing self-destructing antipersonnel land mines and antivehicular land mines such as MOPMS or Volcano.

The terms *mine*, *antipersonnel obstacle*, *protective minefield*, and *minefield* do not refer to an obstacle that contains non-self-destructing antipersonnel land mines or booby traps.

Any references to antipersonnel mines and the employment of minefields should be considered in the context of this policy.

ARMY VALUES

Loyalty	Bear true faith and allegiance to the Constitution, the Army, your unit, and other Soldiers.
Duty	Fulfill your obligations.
Respect	Treat people with dignity as they should be treated.
Selfless Service	Put the welfare of the nation, the Army, and your subordinates before your own.
Honor	Live up to all the Army Values.
Integrity	Do what's right, legally and morally.
Personal Courage (Physical or Moral)	Face fear, danger, or adversity.

CAMOUFLAGE FACE PAINT, APPLICATION TO SKIN

	SKIN COLOR	SHINE AREAS	SHADOW AREAS
CAMOUFLAGE MATERIAL	LIGHT OR DARK	FOREHEAD, CHEEKBONES, EARS, NOSE AND CHIN	AROUND EYES, UNDER NOSE, AND UNDER CHIN
LOAM AND LIGHT GREEN STICK	ALL TROOPS USE IN AREAS WITH GREEN VEGETATION	USE LOAM	USE LIGHT GREEN
SAND AND LIGHT GREEN STICK	ALL TROOPS USE IN AREAS LACKING GREEN VEGETATION	USE LIGHT GREEN	USE SAND
LOAM AND WHITE	ALL TROOPS USE ONLY IN SNOW-COVERED TERRAIN	USE LOAM	USE WHITE
BURNT CORK, BARK CHARCOAL, OR LAMP BLACK	ALL TROOPS, IF CAMOUFLAGE STICKS NOT AVAILABLE	USE	DO NOT USE
LIGHT-COLOR MUD	ALL TROOPS, IF CAMOUFLAGE STICKS NOT AVAILABLE	DO NOT USE	USE

CODE OF CONDUCT

I. I am an American, fighting in the forces which guard my country and our way of life. I am prepared to give my life in their defense.

II. I will never surrender of my own free will. If in command, I will never surrender the members of my command while they still have the means to resist.

III. If I am captured, I will continue to resist by all means available. I will make every effort to escape and aid others to escape. I will accept neither parole nor special favors from the enemy.

IV. If I become a prisoner of war, I will keep faith with my fellow prisoners. I will give no information or take part in any action which might be harmful to my comrades. If I am senior, I will take command. If not, I will obey the lawful orders of those appointed over me, and will back them up in every way.

V. When questioned, should I become a prisoner of war, I am required to give only name, rank, service number, and date of birth. I will evade answering further questions to the utmost of my ability. I will make no oral or written statements disloyal to my country (and its allies) or harmful to their cause.

VI. I will never forget that I am an American, fighting for freedom, responsible for my actions, and dedicated to the principles that made my country free. I will trust in my God and in the United States of America.

COMMUNICATION METHODS, COMPARISON OF

Method	*Advantages*	*Disadvantages*
Messengers	• Messengers are the most secure means of communication. • Messengers can hand carry large maps with overlays. • Messengers can deliver supplies along with messages. • Messengers are flexible (can travel long/short distances by foot or vehicle).	• Messengers are slow, especially if traveling on foot for a long distance. • Messengers might be unavailable, depending on manpower requirements (size of element delivering message). • Messengers can be captured by enemy.
Wire	• Wire reduces radio net traffic. • Wire reduces electromagnetic signature. • Wire is secure and direct. • Wire can be interfaced with a radio.	• Wire has to be carried (lots of it). • Wire must be guarded. • Wire is time consuming.
Visual Signals	• Visual signals aid in identifying friendly forces. • Visual signals allow transmittal of prearranged messages. • Visual signals are fast. • Visual signals provide immediate feedback.	• Visual signals can be confusing. • Visual signals are visible from far away. • The enemy might see them, too.
Sound	• Sound can be used to attract attention. • Sound can be used to transmit prearranged messages. • Sound can be used to spread alarms. • Everyone can hear it at once. • Sound provides immediate feedback.	• The enemy hears it also. • Sound gives away your position.
Radio	• Radios are the most frequently used means of communication. • Radios are fast. • Radios are light. • Radios can be interfaced with telephone wire.	• Radio is the least secure means of communication. • Radios require batteries. • Radios must be guarded or monitored.

DECONTAMINATION LEVELS AND TECHNIQUES

Levels	*Techniques*[1]	*Purpose*	*Best Start Time*	*Performed By*
Immediate	Skin decontamination Personal wipe down Operator wipe down Spot decontamination	Saves lives Stops agent from penetrating Limits agent spread Limits agent spread	Before 1 minute Within 15 minutes Within 15 minutes Within 15 minutes	Individual Individual or buddy Individual or crew Individual or crew
Operational	MOPP gear exchange[2] Vehicle wash down	Provides temporary relief from MOPP4 Limits agent spread	Within 6 hours Within 1 hour (CARC) or within 6 hours (nonCARC)	Unit Battalion crew or decontamination platoon
Thorough	DED and DAD DTD	Provides probability of long-term MOPP reduction	When mission allows reconstitution	Decontamination platoon Contaminated unit
Clearance	Unrestricted use of resources	METT-TC depending on the type of equipment contaminated	When mission permits	Supporting strategic resources

1 The techniques become less effective the longer they are delayed.
2 Performance degradation and risk assessment must be considered when exceeding 6 hours.

FIRST AID

1. Check for BREATHING
2. Check for BLEEDING
3. Check for SHOCK

IED SPOT REPORT

IED SPOT REPORT

LINE 1.	DATE-TIME-GROUP: [State when the item was discovered.]
LINE 2.	UNIT:
LINE 3.	LOCATION OF IED: [Describe as specifically as possible.]
LINE 4.	CONTACT METHOD: [Radio frequency, call sign, POC.]
LINE 5.	IED STATUS: [Detonation or no detonation.]
LINE 6.	IED TYPE: [Disguised static / Disguised moveable / Thrown / Placed on TGT.]
LINE 7.	NUMBER OF IEDs:
LINE 8.	PERSONNEL STATUS:
LINE 6.	EQUIPMENT STATUS:
LINE 7.	COLLATERAL DAMAGE OR POTENTIAL FOR COLLATERAL DAMAGE:
LINE 8.	TACTICAL SITUATION: [Briefly describe current tactical situation.]
LINE 9.	REQUEST FOR: [QRF / EOD / MEDEVAC].
LINE 10.	LOCATION OF L/U WITH REQUESTED FORCE (S):

IED, VEHICLE, CAPACITIES AND DANGER ZONES

ATF	Vehicle Description	Maximum Explosives Capacity	Lethal Air Blast Range	Minimum Evacuation Distance	Falling Glass Hazard
	Compact Sedan	500 Pounds 227 Kilos (In Trunk)	100 Feet 30 Meters	1,500 Feet 457 Meters	1,250 Feet 381 Meters
	Full-Size Sedan	1,000 Pounds 455 Kilos (In Trunk)	125 Feet 38 Meters	1,750 Feet 534 Meters	1,750 Feet 534 Meters
	Passenger Van or Cargo Van	4,000 Pounds 1,818 Kilos	200 Feet 61 Meters	2,750 Feet 838 Meters	2,750 Feet 838 Meters
	Small Box Van (14 Ft. box)	10,000 Pounds 4,545 Kilos	300 Feet 91 Meters	3,750 Feet 1,143 Meters	3,750 Feet 1,143 Meters
	Box Van or Water/Fuel Truck	30,000 Pounds 13,636 Kilos	450 Feet 137 Meters	6,500 Feet 1,982 Meters	6,500 Feet 1,982 Meters
	Semi-Trailer	60,000 Pounds 27,273 Kilos	600 Feet 183 Meters	7,000 Feet 2,134 Meters	7,000 Feet 2,134 Meters

ILLNESS IN THE FIELD, RULES FOR AVOIDING

- Never consume foods and beverages from unauthorized sources.
- Never soil the ground with urine or feces. Use a latrine or "cat hole."
- Keep your fingers and contaminated objects out of your mouth.
- Wash your hands--
  -- After any contamination.
  -- Before eating or preparing food.
  -- Before cleaning your mouth and teeth.
- Wash all mess gear after each meal or use disposable plastic ware once.
- Clean your mouth and teeth at least once each day.
- Avoid insect bites by wearing proper clothing and using insect repellents.
- Avoid getting wet or chilled unnecessarily.
- Avoid sharing personal items with other Soldiers, for example--
  -- Canteens.
  -- Pipes.
  -- Toothbrushes.
  -- Washcloths.
  -- Towels.
  -- Shaving gear.
- Avoid leaving food scraps lying around.
- Sleep when possible.
- Exercise regularly.

INDIVIDUAL FIGHTING POSITIONS, CHARACTERISTICS OF

Type	Position	Estimated Construction Time (man-hours)	Equipment Requirements	Direct Small Caliber Fire	Indirect Fire Blast and Fragmentation (Near-Miss)*	Indirect Fire Blast and Fragmentation (Direct Hit)	Nuclear Weapons **	Remarks
Hasty	Crater	0.2	Hand tools	7.62 mm	Better than in open – no overhead protection	None	Fair	
	Skirmisher's trench	0.5	Hand tools	7.62 mm	Better than in open – no overhead protection	None	Fair	
	Prone position	1.0	Hand tools	7.62 mm	Better than in open – no overhead protection	None	Fair	Provides all-around cover
Deliberate	One-soldier position	3.0	Hand tools	12.7 mm	Medium artillery no closer than 30 ft – no overhead protection	None	Fair	
	One-soldier position with 1.5 ft overhead cover	8.0	Hand tools	12.7 mm	Medium artillery no closer than 30 ft	None	Good	Additional cover provides protection from direct hit small mortar blast
	Two-soldier position	6.0	Hand tools	12.7 mm	Medium artillery no closer than 30 ft – no overhead protection	None	Fair	
	Two-soldier position with 1.5 ft overhead cover	11.0	Hand tools	12.7 mm	Medium artillery no closer than 30 ft	None	Good	Additional cover provides protection from direct hit small mortar blast
	AT-4 position	3.0	Hand tools	12.7 mm	Medium artillery no closer than 30 ft – no overhead protection	None	Fair	

Note: Chemical protection is assumed because of individual protective masks and clothing.

* Shell sizes are:

	Small	Medium
Mortar	82mm	120mm
Artillery	105mm	152mm

* Nuclear protection ratings are rated poor, fair, good, very good, and excellent

NINE-LINE UXO INCIDENT REPORT

Nine-Line UXO Incident Report

1. DTG: Date and time UXO was discovered.
2. Reporting Unit or Activity, and UXO Location: Grid coordinates.
3. Contact Method: How EOD team can contact the reporting unit.
4. Discovering Unit POC: MSE, or DSN phone number, and unit frequency or call sign.
5. Type of UXO: Dropped, projected, thrown, or placed, and number of items discovered.
6. Hazards Caused by UXO: Report the nature of perceived threats such as a possible chemical threat or a limitation of travel over key routes.
7. Resources Threatened: Report any equipment, facilities, or other assets threatened by the UXO.
8. Impact on Mission: Your current situation and how the UXO affects your status.
9. Protective Measures: Describe what you have done to protect personnel and equipment such as marking the area and informing local civilians.

MOPP LEVELS

MOPP LEVELS

Equipment	*MOPP Ready*	*MOPP0*	*MOPP1*	*MOPP2*	*MOPP3*	*MOPP4*	*Mask Only*
Mask	Carried	Carried	Carried	Carried	Worn	Worn	Worn***
JSLIST	Ready*	Avail**	Worn	Worn	Worn	Worn	
Overboots	Ready*	Avail**	Avail**	Worn	Worn	Worn	
Gloves	Ready*	Avail**	Avail**	Avail**	Avail**	Worn	
Helmet Cover	Ready*	Avail**	Avail**	Worn	Worn	Worn	

* Item must be available to Soldier within two hours, with replacement available within six hours.
** Item must be positioned within arm's reach of the Soldier.
*** Soldier Never "mask only" if a nerve or blister agent has been used in the AO.

PERSONAL PREDEPLOYMENT CHECKLIST, EXAMPLE

Defense Enrollment Eligibilty Reporting System (DEERS)	Verify your DEERS information and ensure your family members can get needed medical care in your absence.
Dental Records	Update if needed.
Documents, Locations of	Ensure that your spouse or other family member(s) know where to find all of the above documents.
DD Form 93 Emergency Data Record	Check to ensure this is current and correct.
Eyeglasses and Protective Mask Inserts	Ensure you have two pairs of eyeglasses and protective mask inserts, all with your current prescription, if required.
Family Assistance	
Army Community Service (ACS)	Tell your family where to get various kinds of support and help while you are gone.
Legal Aid, Military	Tell your spouse where to get military legal aid in your absence.
Readiness Group (FRG)	Tell your family where to get various kinds of support and help while you are gone.
Finances	Ensure your spouse has access to all of your records and accounts and update them as needed.
Identification	Ensure you have two sets of these, if required.
Legal	See Family Assistance.
Life Insurance	Designate your beneficiary on SGLV Forms 8286 and 8286A, Soldier's Group Life Insurance (SGLI) Election and Certificate.
Directive, Advance	Specify any decisions you wish others to make on your behalf should you be unable to do so for yourself.
Medical (see also Power of Attorney)	
DD Form 2766 (Shot Record)	Keep your vaccinations and immunizations current.
Directive, Advance	Prepare if you want to specify how decisions are made on your behalf should you be unable to do so for yourself.
Living Will	Prepare if desired.
Records	Update if needed.
Warnings Tags	Ensure you have two sets of these, if required.
Power of Attorney	
General	Prepare to allow someone to perform all duties for you in your absence.
Medical, Durable	Prepare one of these to designate who makes decisions for you or your dependents, including your minor children, should a medical emergency occur while you are deployed or otherwise unable to make the decision yourself.
Special	Prepare to allow someone to perform a particular kind of duty for you in your absence.
Property	Prepare or update accounts, documents, and records as needed.
Service Record	Check to ensure this is current and correct.
Training	Update your weapon qualification(s), if needed.
Will(s)	Prepare new or update existing, for you and your spouse, if needed.

EXAMPLE

POTENTIAL INDICATORS

SIGHT ***Look for--***	***SOUND*** ***Listen for--***	***TOUCH*** ***Feel for--***	***SMELL*** ***Smell for--***
• Enemy personnel, vehicles, and aircraft • Sudden or unusual movement • New local inhabitants • Smoke or dust • Unusual movement of farm or wild animals • Unusual activity--or lack of activity--by local inhabitants, especially at times or places that are normally inactive or active • Vehicle or personnel tracks • Movement of local inhabitants along uncleared routes, areas, or paths • Signs that the enemy has occupied the area • Evidence of changing trends in threats • Recently cut foliage • Muzzle flashes, lights, fires, or reflections • Unusual amount (too much or too little) of trash	• Running engines or track sounds • Voices • Metallic sounds • Gunfire, by weapon type • Unusual calm or silence • Dismounted movement • Aircraft	• Warm coals and other materials in a fire • Fresh tracks • Age of food or trash	• Vehicle exhaust • Burning petroleum products • Food cooking • Aged food in trash • Human waste

OTHER CONSIDERATIONS	
Armed Elements	Locations of factional forces, mine fields, and potential threats.
Homes and Buildings	Condition of roofs, doors, windows, lights, power lines, water, sanitation, roads, bridges, crops, and livestock.
Infrastructure	Functioning stores, service stations, and so on.
People	Numbers, gender, age, residence or DPRE status, apparent health, clothing, daily activities, and leadership.
Contrast	Has anything changed? For example, are there new locks on buildings? Are windows boarded up or previously boarded up windows now open, indicating a change in how a building is expected to be used? Have buildings been defaced with graffiti?

PROWORDS

PROWORD	MEANING
ALL AFTER	I refer to the entire message that follows...
ALL BEFORE	I refer to the entire message that precedes...
BREAK	I now separate the text from other parts of the message.
CORRECTION	There is an error in this transmission. This will continue with the last word correctly transmitted.
GROUPS	This message contains the number of groups indicated by the numeral following.
I SAY AGAIN	I am repeating transmission or part indicated.
I SPELL	I shall spell the next word phonetically.
MESSAGE	A message that requires recording is about to follow. (Transmitted immediately after the call.) This proword is not used on nets primarily employed for conveying messages. It is intended for use when messages are passed on tactical or reporting net.
MORE TO FOLLOW	Transmitting station has additional traffic for the receiving station.
OUT	This is the end of my transmission to you and no answer is required or expected.
OVER	This is the end of my transmission to you and a response is necessary. Go ahead: transmit.
RADIO CHECK	What is my signal strength and readability, i.e. How do you hear me?
ROGER	I have received your last transmission satisfactorily, radio check is loud and clear.
SAY AGAIN	Repeat all of your last transmission. Followed by identification data means “repeat - (portion indicated).”
THIS IS	This transmission is from the station whose designator immediately follows.
TIME	That which immediately follows is the time or date-time group of the message.
WAIT	I must pause for a few seconds.
WAIT-OUT	I must pause longer than a few seconds.
WILCO	I have received your transmission, understand it, and will comply, to be used only by the addressee. Since the meaning of ROGER is included in that of WILCO, the two prowords are never used together.
WORD AFTER	I refer to the word of the message that follows.
WORD BEFORE	I refer to the word of the message that precedes.

SALUTE

Line No.	*Type Info*	*Description*
1	(S)ize/Who	Expressed as a quantity and echelon or size. For example, report 10 enemy "Infantrymen" (not "a rifle squad").
If multiple units are involved in the activity you are reporting, you can make multiple entries.		
2	(A)ctivity/What	Relate this line to the PIR being reported. Make it a concise bullet statement. Report what you saw the enemy doing, for example, "emplacing mines in the road."
3	(L)ocation/Where	This is generally a grid coordinate, and should include the 100,000-meter grid zone designator. The entry can also be an address, if appropriate, but still should include an eight-digit grid coordinate. If the reported activity involves movement, for example, advance or withdrawal, then the entry for location will include "from" and "to" entries. The route used goes under "Equipment/How."
4	(U)nit/Who	Identify who is performing the activity described in the "Activity/What" entry. Include the complete designation of a military unit, and give the name and other identifying information or features of civilians or insurgent groups.
5	(T)ime/When	For future events, give the DTG for when the activity will initiate. Report ongoing events as such. Report the time you saw the enemy activity, not the time you report it. Always report local or Zulu (Z) time.
6	(E)quipment/How	Clarify, complete, and expand on previous entries. Include information about equipment involved, tactics used, and any other essential elements of information (EEI) not already reported in the previous lines.

SHELTER CHECKLIST

B	Blend
L	Low silhouette
I	Irregular shape
S	Small
S	Secluded location

SOLDIER'S CREED

I am an American soldier.

I am a Warrior and a member of a team.

I serve the people of the United States and live the Army Values. I will always place the mission first.

I will never accept defeat. I will never quit.

I will never leave a fallen comrade.

I am disciplined, physically and mentally tough, trained, and proficient in my Warrior tasks and drills.

I always maintain my arms, my equipment, and myself. I am an expert, and I am a professional.

I stand ready to deploy, engage, and destroy the enemies of the United States of America in close combat.

I am a guardian of freedom and the American way of life. I am an American soldier.

SURVIVAL

S	**S**ize up the situation (surroundings, physical condition, equipment)
U	**U**se all your senses. Undue haste makes waste
R	**R**emember where you are
V	**V**anquish fear and panic
I	**I**mprovise
V	**V**alue living
A	**A**ct like the natives
L	**L**ive by your wits, but for now **L**earn basic skills

WARRIOR ETHOS

I will always place the mission first. I will never accept defeat.
I will never quit.
I will never leave a fallen comrade.

GLOSSARY

SECTION I. ACRONYMS AND ABBREVIATIONS

1SG first sergeant

A

AAR after-action review
AC alternating current
ACADA automatic chemical agent decontaminating apparatus
ACH advanced combat helmet
ACS army community service
ACU army combat uniforms
AMAT anti-materiel
ANCD automated net control device
AO area of operation
AP antipersonnel
APOBS Antipersonnel Obstacle Breaching System
ARNG Army National Guard
ARNGUS Army National Guard of the United States
ASIP advanced system improvement program
AT antitank
ATNAA antidote treatment, nerve agent, auto injector

B

BDM bunker defeat munition
BDO battle dress overgarment
BIS backup iron sight
BLISS blend, low silhouette, irregular shape, small, secluded location
BVO black vinyl overshoe

C

C Celsius (degrees)
CANA convulsant antidote for nerve agents
CAT combat application tourniquet
CB chemical and biological
CBRN chemical, biological, radiological, or nuclear
CCIR commander's critical information requirements
CCM close combat missile

CCO close combat optic
CED captured enemy document
CEE captured enemy equipment
CLP cleaner lubricant preservative
CLU command launch unit
COMSEC communications security
CPFC chemical protective footwear cover
CPHC chemical protective helmet cover
CS confined space
CW chemical warfare
CVC combat vehicle crew

D

DAP decontamination apparatus portable
DED detailed equipment decontamination
DEERS Defense Enrollment Eligibility Reporting System
DEET N-diethyl-m-toluamide program
det detonator
DOD Department of Defense
DPRE displaced persons, refugees, or evacuees
DTD detailed troop decontamination

E

EEFI essential elements of friendly information
EEI essential elements of information
EMP electromagnetic pulse
EOD explosive ordnance disposal
EPA evasion plan of action
EPW enemy prisoner of war
ES2 "Every Soldier Is a Sensor" concept

F

F Fahrenheit (degrees)
FASCAM family of scatterable mines
FOUO for official use only
FOV field of view
FP force protection
FPL final protective line
FSG family support group

G

G-2 assistant chief of staff for intelligence
GPFU gas particulate filter unit
GVO green vinyl overshoe

H

HE high explosive
HEAT high-explosive antitank
HEDP high-explosive dual purpose
HP high penetration
HUMINT human intelligence
HWTS heavy weapon thermal sight

I

IAW in accordance with
IBA interceptor body armor
ICAM improved chemical agent monitor
ID identification
IED improvised explosive device
IFAK improved first-aid kit
IHFR improved high-frequency radio
IMT individual movement technique
IR infrared

J

JSLIST joint service lightweight integrated suit technology

K

kph kilometer per hour

L

LAW light antiarmor weapon
lb pound
LWTS light weapon thermal sight

M

m meter
max maximum
MBITR multiband intrateam radio
MDI modernized demolition initiator
MEL maximum engagement line
METT-TC mission, enemy, terrain, troops, and equipment, time available, and civil considerations
MHz megahertz
mm millimeter
MOLLE modular lightweight load-carrying equipment
MOPMS Modular Pack Mine System
MOPP mission-oriented protective posture
MOS military occupational specialty
mph miles per hour
MTF medical treatment facility
MULO multipurpose vinyl overshoe
MWTS medium weapon thermal sight

N

NAAK nerve agent antidote kit
NATO North Atlantic Treaty Organization
NBC nuclear, biological, chemical (obsolete; see CBRN)
NCO noncommissioned officer
NSN national stock number
NVD night vision device
NVG night vision goggles

O

OD olive drab
OHC overhead cover
OOTW operations other than war
OP observation post
OPORD operation order
OPSEC operations security
OTV outer tactical vest

P

PATRIOT phased array, tracking radar intercept on target
PDF principal direction of fire
PIR priority intelligence requirement

POW prisoner of war

R

RCU radio control unit
RDD radiological dispersal device
RF radio frequency
ROE Rules of Engagement
RP reference point
RS reduced sensitivity
RTU receiver transmitter unit

S

S-2 battalion/brigade intelligence officer
SABA self-aid/buddy-aid
SALUTE size, activity, location, uniform, time, and equipment
SATCOM single-channel tactical satellite communications
SAW squad automatic weapon
SCPE simplified collective protection equipment
SDS Sorbent Decontamination System
SERE survival, evasion, resistance, and escape
SGLI Soldier's Group Life Insurance
SINCGARS Single-Channel Ground and Airborne Radio System
SIP system improvement program
SLLS stop, look, listen, smell
SLM shoulder-launched munition
SMAW-D shoulder-launched, multipurpose, assault-weapon disposable
SOI signal operating instructions
SOP standing operating procedures
SRTA short-range training ammunition

T

TIB toxic industrial biological
TIC toxic industrial chemical
TIM toxic industrial material
TIR toxic industrial radiological
TM technical manual
TOW tube-launched, optically tracked, wire-guided
TP training practice
TRP target reference point
TWS thermal weapon sight

U

U.S. United States
USAIS United States Army Infantry School
USAR United States Army Reserve
UXO unexploded ordnance

W

WBD warrior battle drill
WFOV wide field of view
WP white phosphorous
WRP weapon reference point

SECTION II. TERMS

A

arroyo steep-walled, eroded valley; same as "wadi"

C

camouflage protection from identification
concealment protection from observation only
cover protection from weapons fire, explosions, fragments, flames, CBRN effects, and observation

F

flag to allow a weapon to extend beyond the corner of a building

G

gebel mountain or mountain range

I

indicator information, needed by the commander to make decisions on the intention or capability of a potential enemy

M

mirage an optical phenomenon caused by the refraction of light through heated air rising from a sandy or stony surface

N

nipa palm a creeping, semiaquatic palm whose sap is a source of nipa fruit and of sugar, whose seeds are edible, and whose long, strong leaves are used in thatching and basketry

O

overhead cover protects soldier from indirect fire

P

parapet enables soldier to engage enemy within assigned sector of fire while protecting the soldier from direct fire

pie-ing aiming a weapon beyond the corner of a building in the direction of travel, without allowing the weapon to extend beyond the corner, and then side-stepping around the corner in a circular fashion with the muzzle of the weapon as the pivot point

S

sago palm a tall palm with long leaves that curve backward, inward, or downward, and whose porous trunk is ground and used to thicken foods and stiffen textiles

savanna a temperate grassland with scattered trees

skirmisher's trench a shallow ditch used as a hasty fighting position

spoil excavated earth

T

toxic industrial materials (TIMs) includes toxic industrial chemical, biological, and radioactive materials; are produced to prescribed toxicity levels; are administered through inhalation (mostly), ingestion, or absorption; may be stored or used in any environment for any tactical purpose—medical, industrial, commercial, military, or domestic. MOPP gear may or may not protect against TIMs.

W

wadi steep-walled, eroded valley; same as "arroyo"

warrior ethos four items extracted from the middle of the Soldier's Creed:
1. I will always place the mission first.
2. I will never accept defeat.
3. I will never quit.
4. I will never leave a fallen comrade.

wind chill the effect of moving air on exposed flesh

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